



Search Experiences at the SR530 Landslide

Thomas J. Richardson
Task Force Leader, WA-TF1
FEMA Type I US&R

SR 530 Landslide

- Saturday, March 22, 2014
- 1037 hrs
- Striking Steelhead Drive & East Steelhead Drive within seconds
- Striking vehicles on SR530 in approximately 1 minute
- Extending nearly 800 acres
- 43 fatalities
- ~50 structures destroyed

SR 530 Landslide



Before the Slide



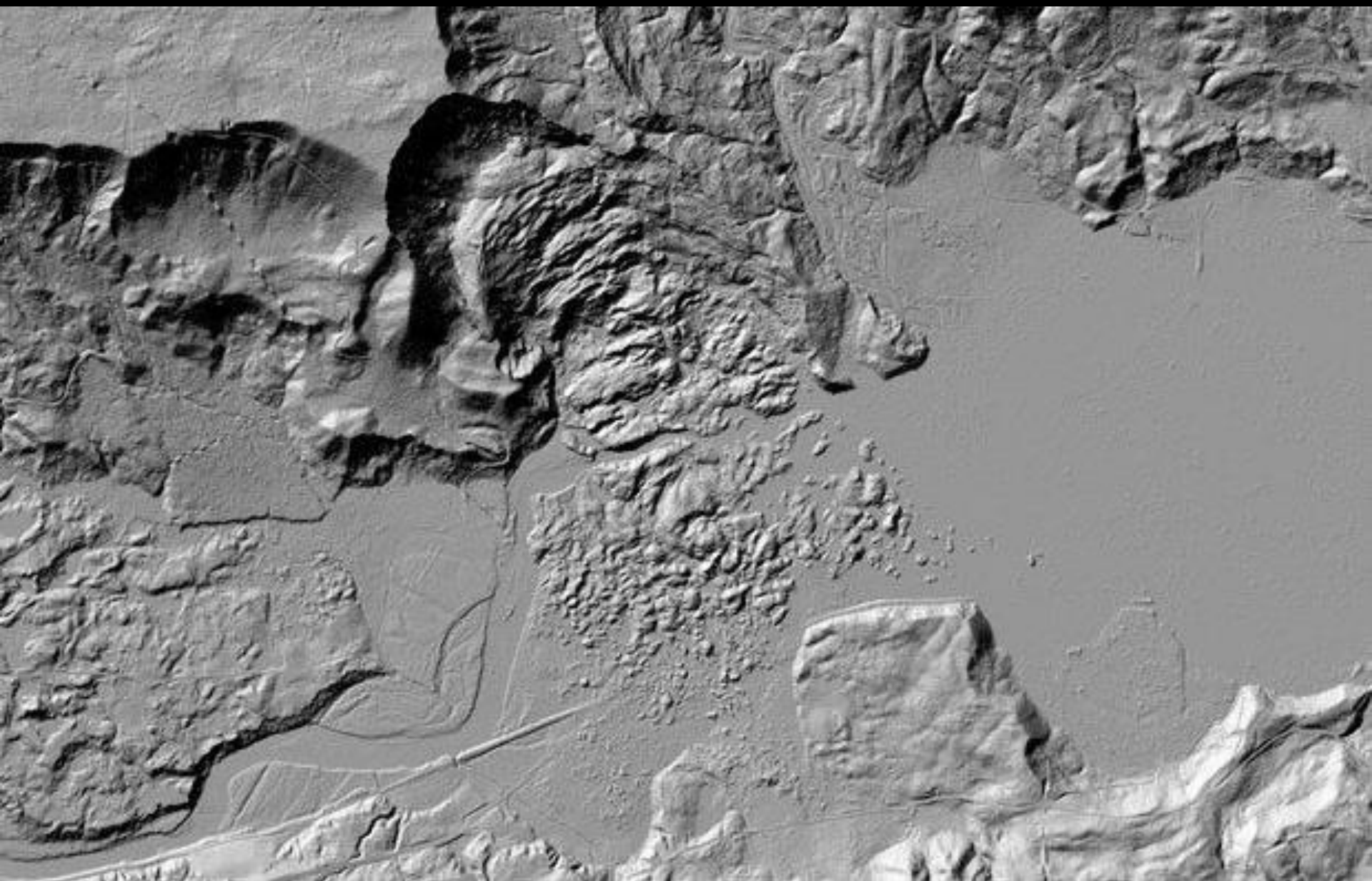
After the Slide



LIDAR - Before



LIDAR - After



Search Conditions

Search Conditions



Former Locations of Steelhead Drive & East Steelhead Drive

Search Area 1



Search Area 4



Search Area 5



Search Area 5



Search Area 5



Search Area 5



Search Area 6, 7



Search Area 7



Search Area 7



Search Area 8



Search Area 8



Search Area 8



Vehicles

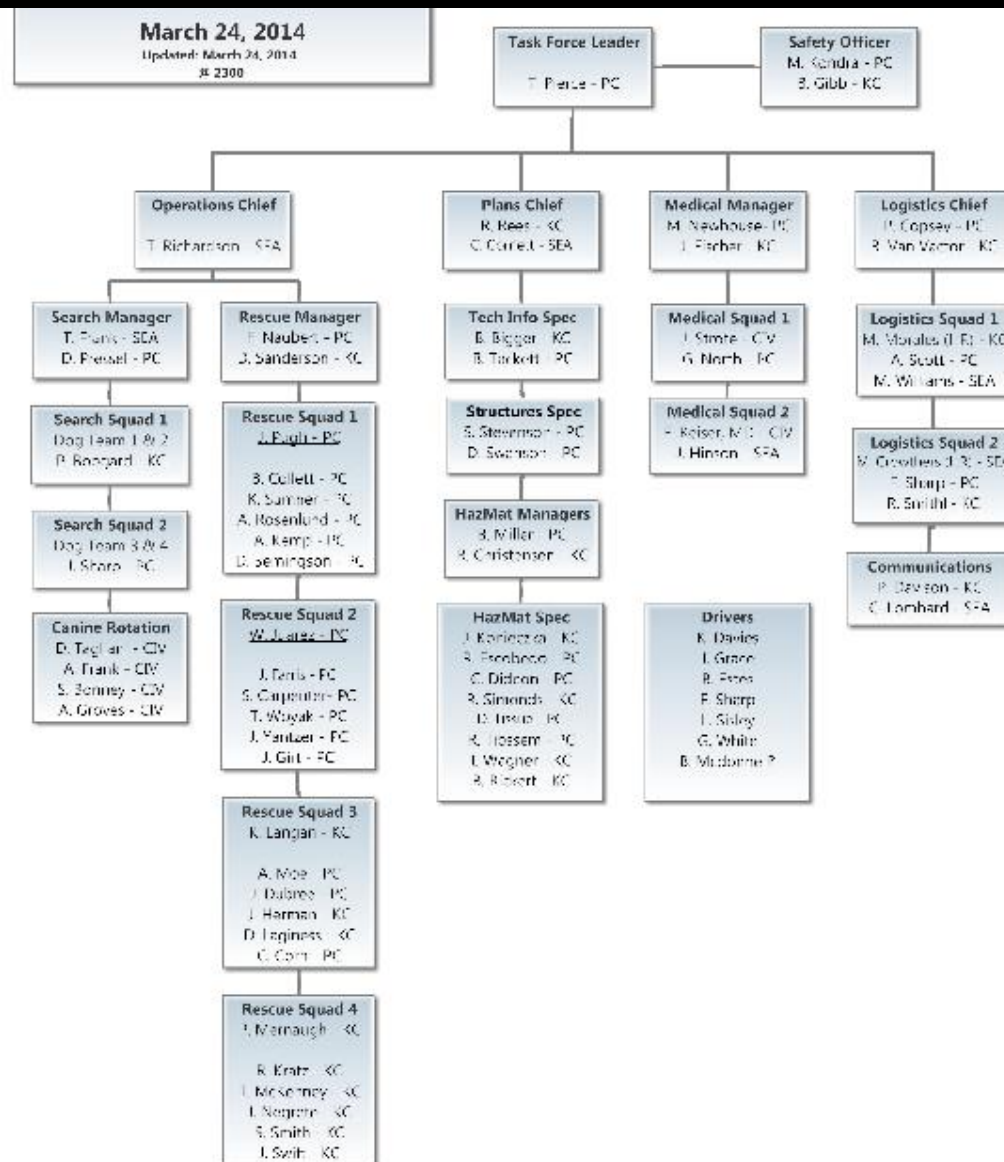


Vehicles



US&R Organization

WA-TF1 Organization



WA-TF1



Deployment/Response

Deployment – On the Radar

From: Richardson, Thomas
Sent: Saturday, March 22, 2014 10:29 PM
To: Mike McCaffree; Larsen, Mark
Subject: Possible Call Out ?

Mike - have you heard anything about a potential call out to this landslide? We have tools that may be of use...

TR

Thomas J. Richardson
Battalion Chief, 4th Battalion C-Platoon
WA-TF1 US&R Task Force Leader
Seattle Fire Department

Deployment – Sunday No Request Yet

From: Mike McCaffree <mmc@centralpiercefireremoval.com>

Sent: Sunday, March 23, 2014 11:28 AM

To: Chris Flores

Cc: Tom Thorson; Cynthia Fajardo; Timothy S. Pierce (tpierce@centralpiercefireremoval.com); Richardson, Thomas; Larsen, Mark

Subject: Re: Oso, Snohomish County

Hello everyone,

There are currently no requests for assistance from Snohomish County DEM through the State EOC to Pierce County DEM or directly to Pierce County DEM from Snohomish County DEM. We have provided a generic offer of assistance to Snohomish County DEM, but they have not requested any assistance from us.

As a reminder, WA-TF1 can only be activated following receipt and acceptance of a FEMA Activation Order. There is currently no agreement in place for WA-TF1 to be used as a State Resource. Any local request for US&R assistance from PC DEM would be handled as mutual aid between the various agencies. As happened during the Roy silo collapse, if there is a request for US&R expertise or resources, Pierce County DEM US&R Division can act as the middleman to identify available resources or expertise and connect the two agencies to work out an agreement to provide support under mutual aid. So far, Snohomish County has not requested Pierce County to provide any US&R expertise or resources.

If you have any questions regarding this process, please let me know.

Mike McCaffree

Program Manager WA-TF1 & Operations Manager

Deployment – Fire Mobilization

HOUSE BILL REPORT HB 1126

This analysis was prepared by non-partisan legislative staff for the use of legislative members in their deliberations. This analysis is not a part of the legislation nor does it constitute a statement of legislative intent.

As Reported by House Committee On:
Public Safety

Title: An act relating to state fire service mobilization.

Brief Description: Concerning state fire service mobilization.

Sponsors: Representatives Goodman, Klippert, Hurst, Van De Wege, Warnick, Ryu and Smith.

Brief History:

Committee Activity:

Public Safety: 1/24/13, 1/30/13 [DPS], 1/24/14 [DP2S].

Brief Summary of Second Substitute Bill

- Redefines and expands the definition and role of fire mobilizations to include mobilizing for fire as well as certain non-fire incidents and rescues.
- Provides that non-host fire protection authorities are eligible for reimbursement of expenses incurred in providing all risk resources for mobilization.

Deployment

EMERGENCY RESPONSE AND RECOVERY AGREEMENT

THIS AGREEMENT is entered by and between Washington State Military Department, hereafter referred to as "Requesting Agency" and Pierce County Department of Emergency Management, a department of Pierce County and the Sponsoring Agency for Washington Urban Search and Rescue Task Force 1, hereafter referred to as the "Task Force".

WHEREAS, the Requesting Agency is supporting Snohomish County who has experienced a devastating catastrophic event requiring immediate rescue and recovery efforts; and

WHEREAS, the Task Force operates personnel and equipment which is specifically trained and designed for emergency response and recovery.

BILLING AND PAYMENT: This is an emergency response and recovery agreement. The Task Force will maintain a detailed record of all costs associated with the response and recovery efforts to include mobilization(s), deployment(s), demobilization(s), operational and logistical support not otherwise covered, repair and/or replacement of damaged or destroyed equipment, equipment rehabilitation, and critical incident stress management. The Requesting Agency shall promptly reimburse the Task Force for all related costs as listed above. The compensation of Participants on the Task Force shall be in accordance with pay schedules and policies of their home agency.

TRANSFER/ASSIGNMENT: Neither party shall have the right to transfer or assign, in whole or part, any or all of its obligations and rights hereunder without the prior written consent of the other party. When executed, this agreement shall be binding upon and shall inure to the benefit of the parties and their successors in interest.

TERM OF AGREEMENT: The effective date of the agreement is April 2, 2014, 12:00:01AM - December 31, 2014 11:59:59PM. If either party desires to terminate the relationship created by this agreement, then they must provide not less than ninety (90) days written notice to the other party.


RELEASE AND HOLD HARMLESS: The Task Force agrees to release and hold harmless the Requesting Jurisdiction from any and all injuries, illness or losses which an individual may suffer as a result of serving in the above capacity.

COMMAND, CONTROL AND COORDINATION: The Task Force shall exercise direct supervisory authority over Participants during mobilizations, deployments, demobilizations, and other activities of the Task Force, but for disciplinary purposes, that authority is limited to temporary suspension from participation. In all other instances where disciplinary action may be necessary, the Task Force shall report the pertinent circumstances to Home Agency, which shall administer discipline as appropriate in accordance with the Home Agency's established rules and regulations.

APPROVED AS TO FORM:

APPROVED AS TO FORM:

Signature	Date
	4-1-14
Task Force Signature	Date
LOWELL PORTER	

Signature	Date
	4-2-14
Washington State Military Dept. Signature	Date
DAN SWISHER, CHIEF FINANCIAL OFFICER	

- First Deployment by WA-TF1 as a state resource (not federalized)
- Agreements signed by participating agencies on 3/24/14
- Signed by State on 4/2/14

Mudslide – Washington State

March 22, 2014

- Large mudslide occurred near town of Oso (pop. 180) in Snohomish County, between the towns of Arlington (pop. 18k) and Darrington (pop. 1k)
- North Fork of the Stillaguamish River & State Road 530 blocked by debris; may lead to ~~localized flooding but significant flash flooding not expected~~

Impacts

- Estimated 16 homes destroyed; damage assessments still ongoing
- 4 confirmed fatalities; 8 injuries; 18 unaccounted for
- Slide movement continues, hindering ground search & rescue
- ~~Mandatory evacuations lifted on March 23; voluntary evacuations remain~~
- 2 shelters open with 27 occupants (ARC, 4:30 a.m. EDT Mar 24)
- Mudslide covers one mile of Highway 350; closed from MP 34 to MP 42

State/Local Response

- Lt Governor declared a State of Emergency on March 22
- WA State EOC fully activated; Snohomish County activated

Federal Response

- Federal Mutual Aid: Two USACE Geotechnical Engineers and Navy EMS deployed
- FEMA Region X remains at Watch/Steady State;
 - State/Tribal LNO deployed to WA EOC on March 23
- No requests for FEMA assistance



WA-TF1 Deployed Monday Evening 3/24/14

- On road within 4 hrs of request for assistance (2.5 days after slide)
- At Base Camp location within 4 hrs of departure
- Working prior to 0900 3/25/14 (~3 days after slide)
- We need to look at expediting size-up and resource request process

Intelligence 3-26



FEMA

FOR: National Urban Search & Rescue Response System
Task Force Representatives / Incident Support Team Members

FROM: Dean Scott, Section Chief
Operations Section
Urban Search & Rescue Branch

c=US, o=U.S. Government, ou=Department of
Homeland Security, ou=FEMA, ou=People,
cn=DEAN A SCOTT,
0.9.2342.19200300.100.1.1=0881359952.FEMA
2014.03.26 18:03:45 -04'00'

DATE: March 26, 2014

RE: Washington Landslide – ESF #9 Advisory #3

Situation: Information contained in this ESF #9 Advisory is as of 1700 EDT, 3/26/2014

On March 22, 2014 at 1:45 p.m. EDT, a large mudslide occurred 17 miles east of Arlington, WA near Oso (pop. 180), in Snohomish County. Mud, debris, and scarring span 1.3 square miles, block State Route 530, damaged approximately 49 structures (primarily single family structures) and covered a large area to an estimated depth of 15 to 20 feet deep in places. Mandatory evacuations were issued, and there are a confirmed 18 people unaccounted with reports of numerous missing people.

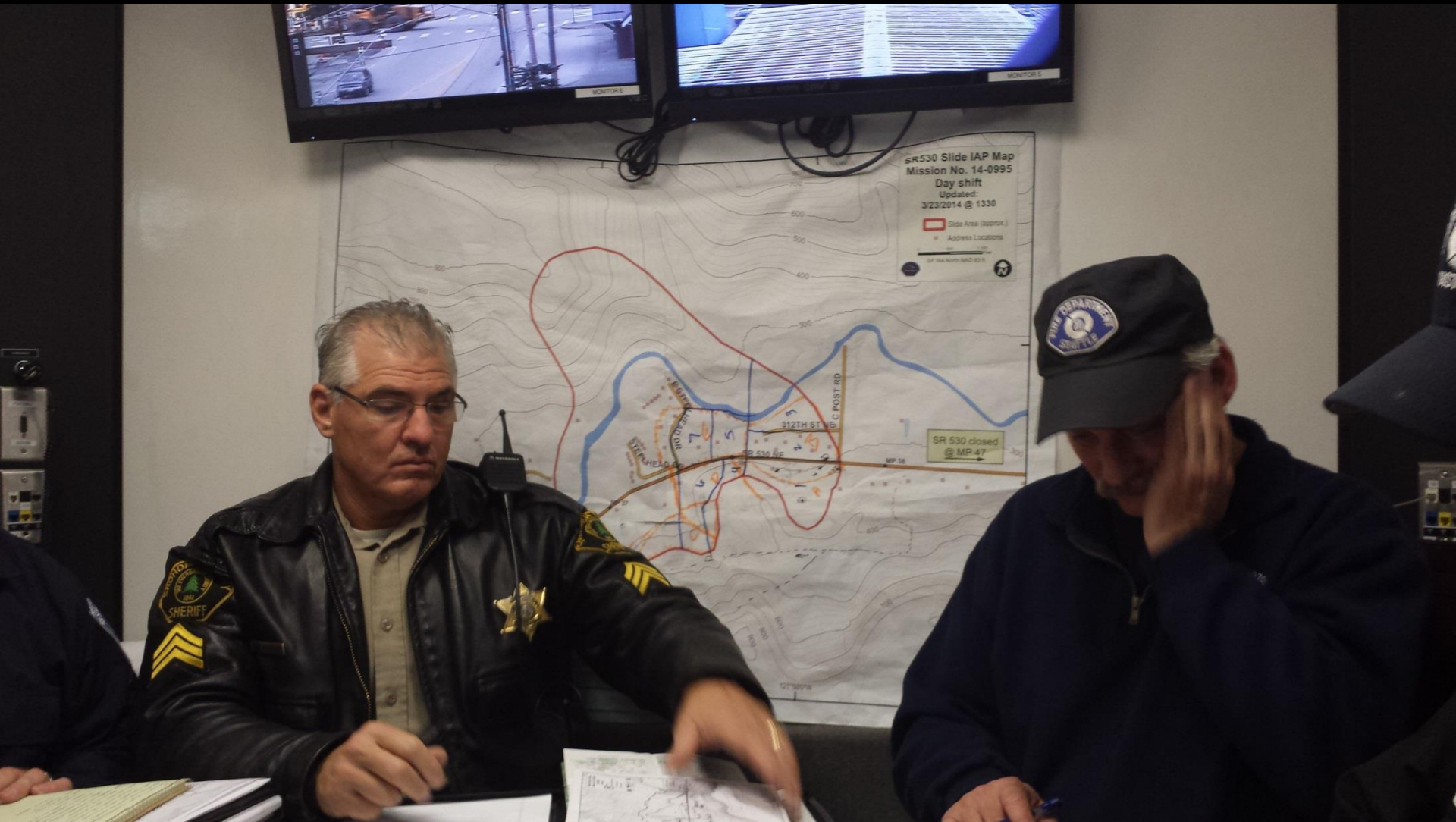
Current Operations: The White IST is deployed and integrated with the FEMA Region X, Regional Response Coordination Center (RRCC); IMAT, a local Type III IMT and the Authority Having Jurisdiction to support the Region and the State of Washington. Washington Task Force One

Incident Objectives & Initial Briefing

Initial Briefing Verbal by AHJ

- Incident had been Branched due to complete isolation of East side by >2 hr drive around
- Best search area access was from East due to access opportunities from Power Line Road
- Incident Commanders directed Task Force to incorporate volunteers in all activities
- Briefings for next 2+ weeks handled by TF Members
- East Search planning entirely lead by US&R on East Side for duration
- IMT started formal briefings in East approx. 2 weeks in

Initial Briefing – 3-25-14 After First Op



Incident Objectives 3-25

DEPARTMENT OF HOMELAND SECURITY FEDERAL EMERGENCY MANAGEMENT AGENCY National Urban Search and Rescue Response System			
INCIDENT OBJECTIVES		1. INCIDENT NAME 2. SR530 Slide	3. DATE Prepared 3/25/14
4. OPERATIONAL PERIOD (DATE/TIME) 0700		3. TIME PREPARED 2100	
5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES) Search of areas 1,2, 3, 4 and 5. Identify structures, human remains, hazards marking with GPS coordinates WAS protocol custom icons.			
6. WEATHER FORECAST FOR OPERATIONAL PERIOD: Today 41 degrees 80% chance of rain.			
7. GENERAL SAFETY MESSAGE see attached safety plan.			
8. ATTACHMENTS (* IF ATTACHED)			
<input checked="" type="checkbox"/> ORGANIZATION LIST (ICS 203)		<input checked="" type="checkbox"/> MEDICAL PLAN (ICS 206)	<input checked="" type="checkbox"/> 205t _____
<input type="checkbox"/> ASSIGNMENT LIST (ICS 204)		<input checked="" type="checkbox"/> INCIDENT MAP	<input type="checkbox"/> _____
<input checked="" type="checkbox"/> COMMUNICATION PLAN (ICS 205)		<input checked="" type="checkbox"/> 207	<input type="checkbox"/> _____
ICS 202 3-80	9. PREPARED BY (PLANNING SECTION CHIEF) Cornett		10. APPROVED BY (INCIDENT COMMANDER)

Incident Objectives 4-23

INCIDENT OBJECTIVES	1. Incident Name SR530 Slide - #14-0995	2. Date April 22, 2014	3. Time 1645
4. Operational Period <p style="text-align: center;">April 23, 2014 All Shifts</p>			
5. General Control Objectives for the Incident (include alternatives) Provide for the safety and health of all deployed personnel. <u>Conduct search operations.</u> Maintain interoperable communications. Continue operations with dignity and respect provided to recovered loved ones. Provide updates for financial record keeping. Document efforts in the search for victims. Provide support to the JIC as requested.			

Incident Organization – Defining the Search

SR 530 Land Slide Search Plan

This plan is based on the definitions and search tactics outlined in the Catastrophic Search and Rescue Addendum to the National SAR Plan

Definitions

Reconnaissance

Recon is conducted in the early stages of a disaster to determine the scope and magnitude of the incident.

Air assets and local first responders did recon for The OSO mudslide in the first couple of hours of the landslide. Recon by ground was limited and difficult due to the soft nature of the mud and water and the hazards associated with this in the slide area.

Hasty search

A rapid search by water, ground and air to locate and rescue surface victims and those able to assist in their rescue

People located with hasty search are easily located visually and audibly and often can assist with their own rescue. Persons incapacitated, hidden by debris or entombed in debris will not be located during this phase of a search.

Hasty search on day 1 of the Oso landslide resulted in multiple live rescues and several recoveries. Searchers on foot, in boats and from the air were able to locate victims visually and audibly as they were calling for help.

Primary search

This is a visual and physical search of likely spots and areas of high probability. Persons who are lightly trapped or partly visible may be found. Searchers look in and around structures and make entry if there are any signs of victims. Search dogs are used to locate persons that are not visible by visual search inside structures or in debris piles. Use of search cameras and other available technology may be used to determine if additional search is needed in debris piles or to help confirm k-9 alerts.

These search efforts are ongoing as of day 5 of this event. Primary search includes grid and sweep search by ground and boat teams and area search by k-9 teams. Searchers are looking for any evidence of victims. Removal of debris and other obstructions is limited and done only when necessary to extricate a victim who has been confirmed.

Persons buried in debris may not be found with this level of search

Secondary Search

Low Density

A second search of areas where there are indications or a high probability that there are victims. High probability areas include debris piles where it is believed victims may exist, or where K-9 alerts have been confirmed by second K-9 alert and or

Areas of Responsibility

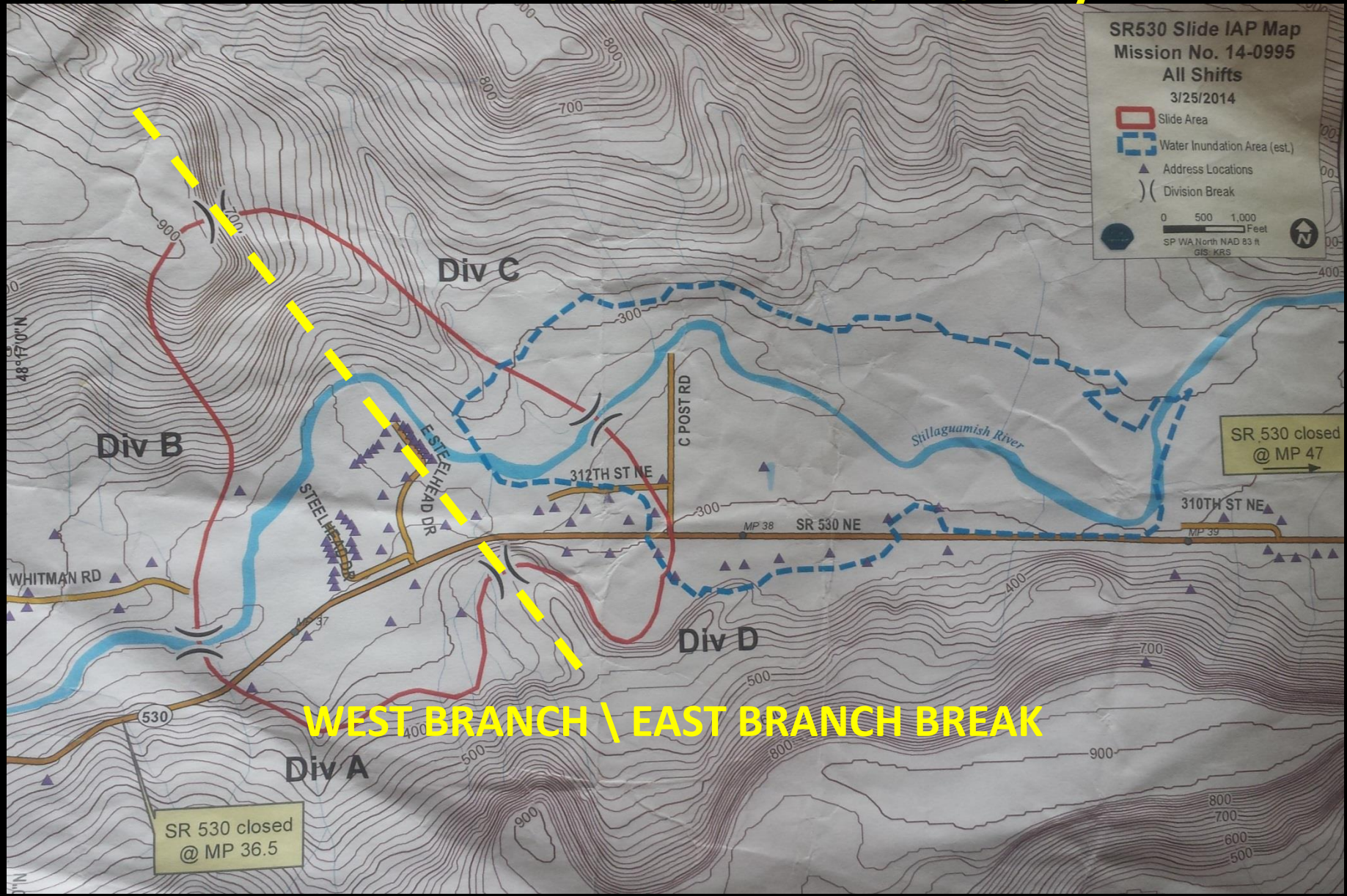
- Initially, WA-TF1 was directed report to, and work for the IMT East Division Supervisor
- IMT East Div. Sup
 - Handled Overall East Operations Supervision
 - Delegated search responsibility to the US&R TF
 - Handled Base Camp creation
 - Handled water search and Search Area 2 (Later Search Area 2 & 8)
 - Handled major road construction efforts in support of search operations
 - Handled dewatering, rerouting of streams
 - Handled material movement after TF Search had cleared it
 - Supported Search Operations with Sawyers for felling and bucking operations
 - Assisted with resolving conflicts between personnel
 - Handled berm construction
- US&R TF
 - Responsible for Search of East Branch Search Areas 1, 3, 4, 5 plus assisted West Branch Search at various times
 - Supported Search Efforts of local volunteers, friends & family
 - Directed/supported Search Efforts by Heavy Equipment Operators

Planning

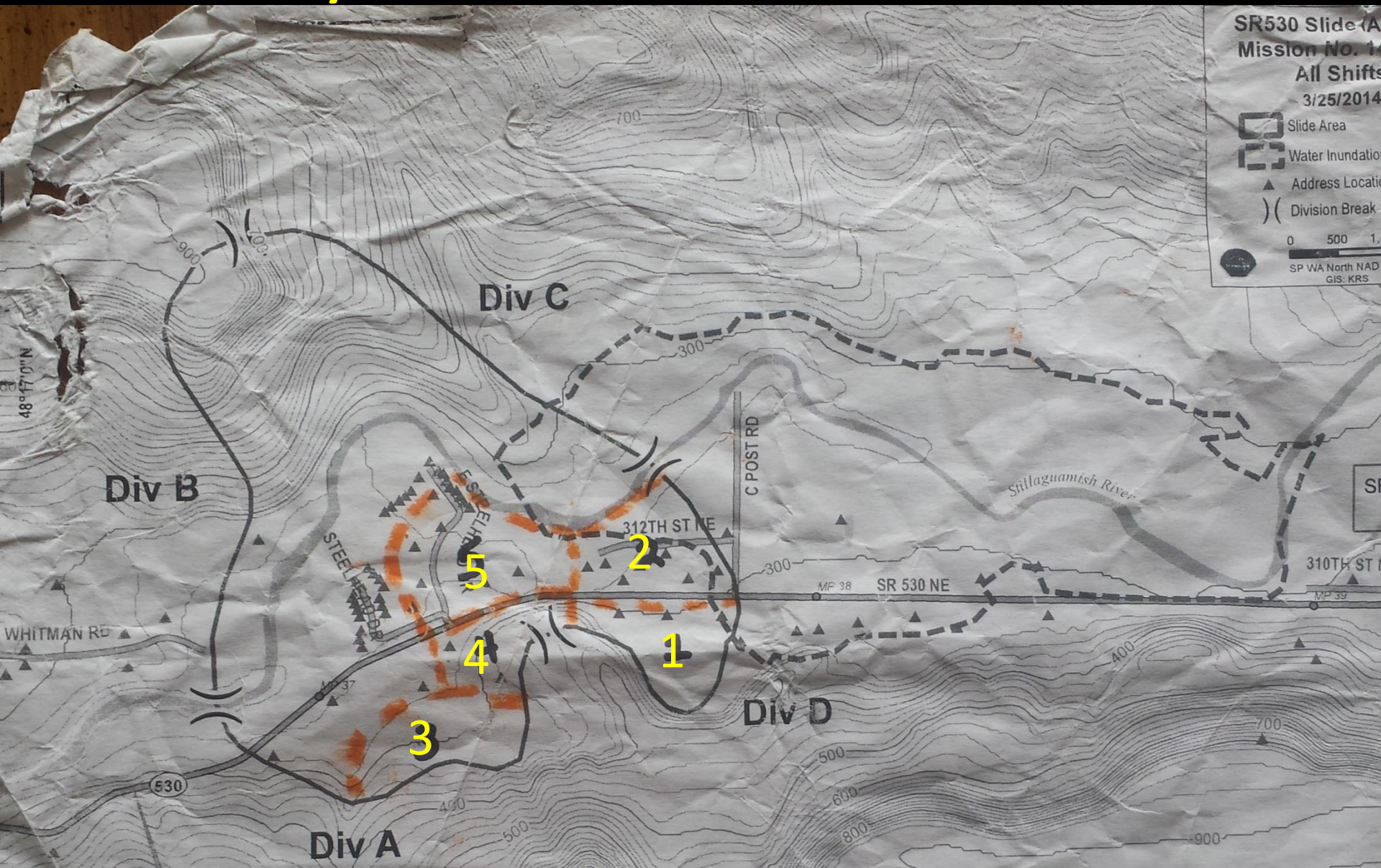
Planning Unsung Heroes – 0230 hrs.



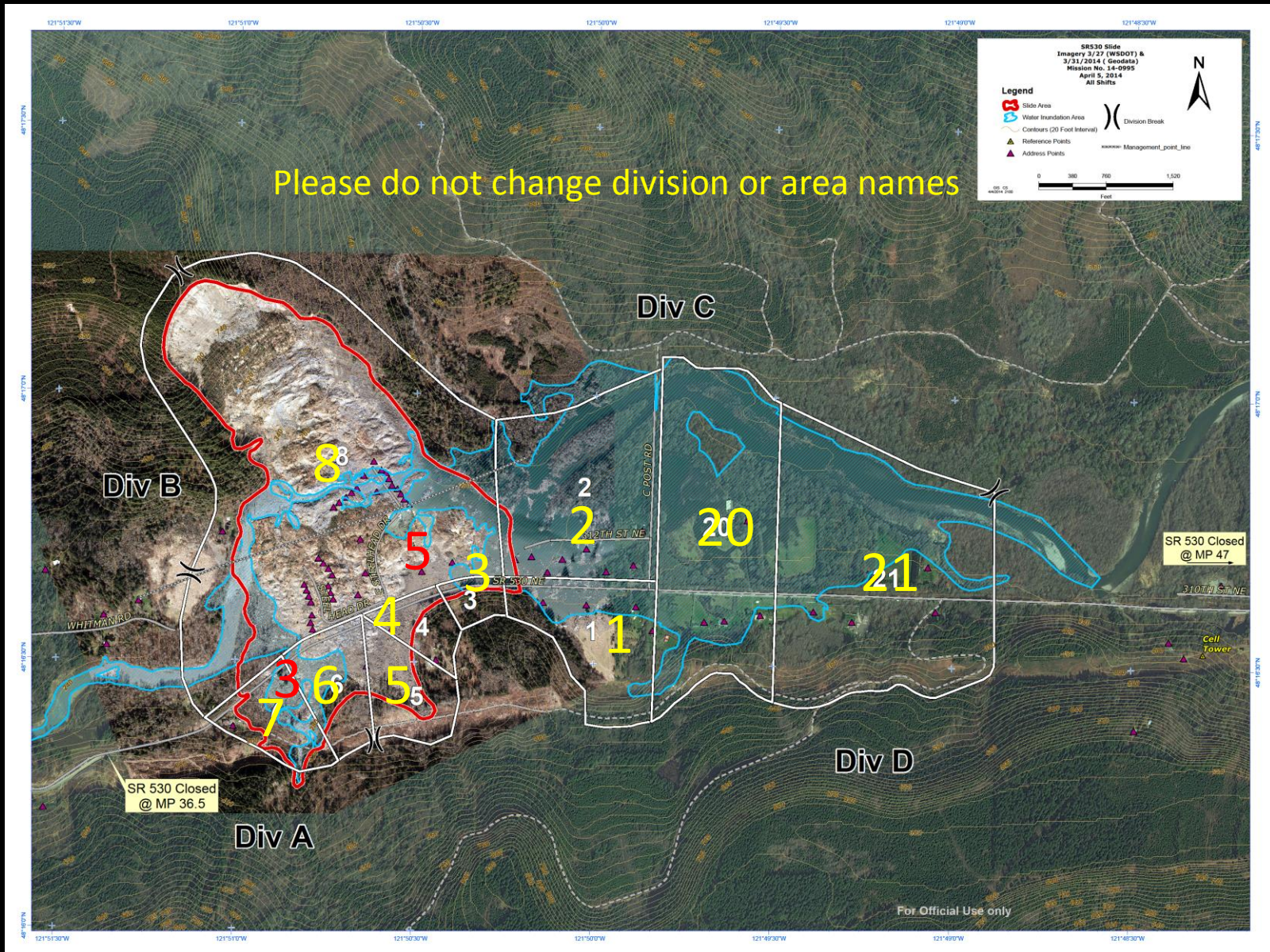
Initial Division Boundary



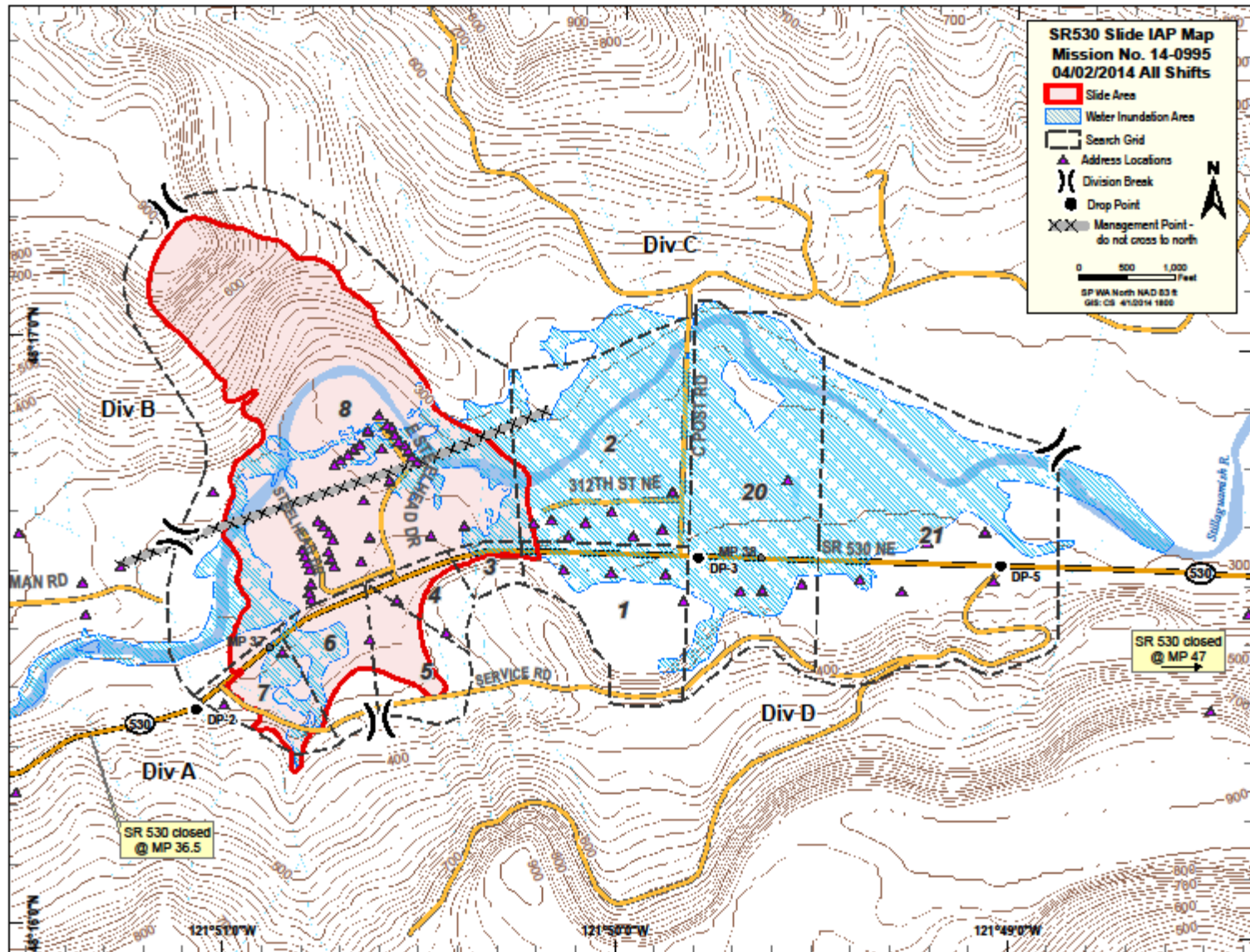
Early Search Area Boundaries



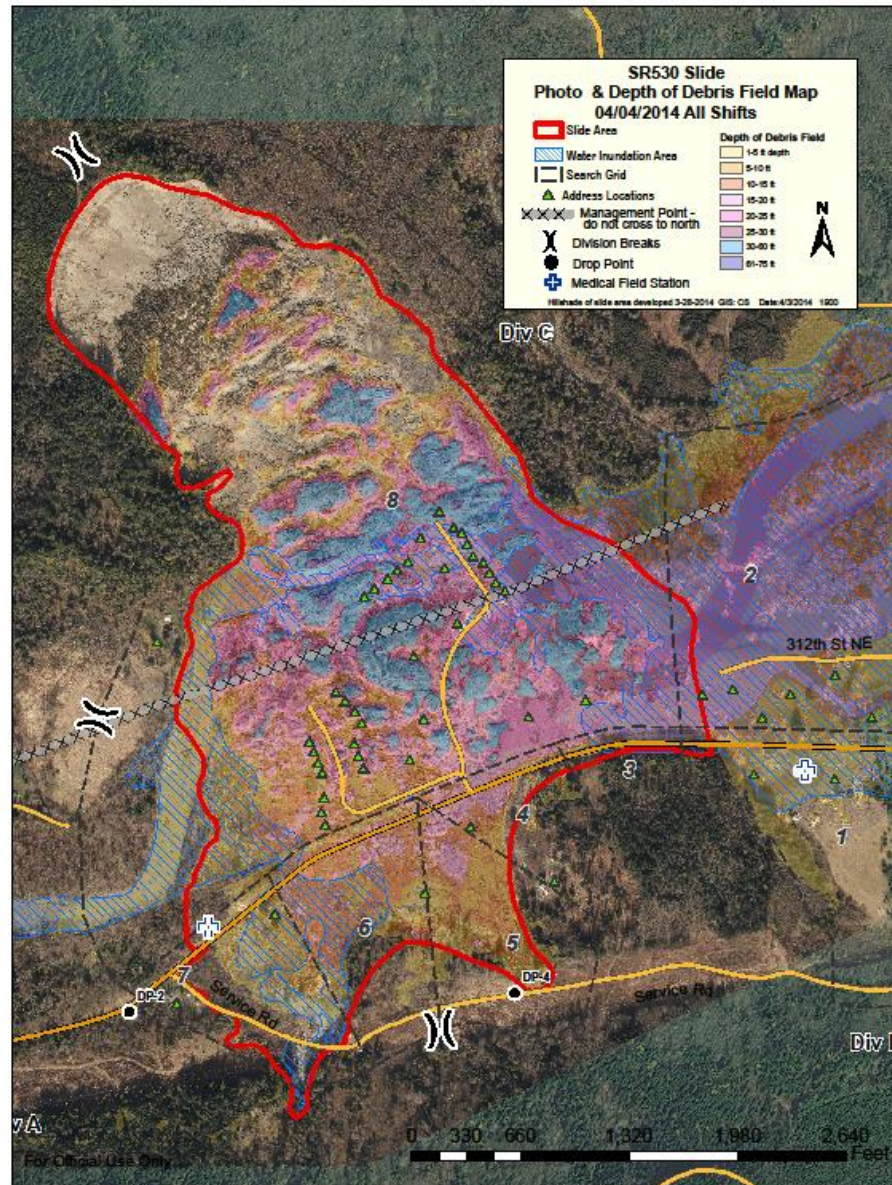
Search Area Changes



Search Planning - Access



Search Planning – Material Depth



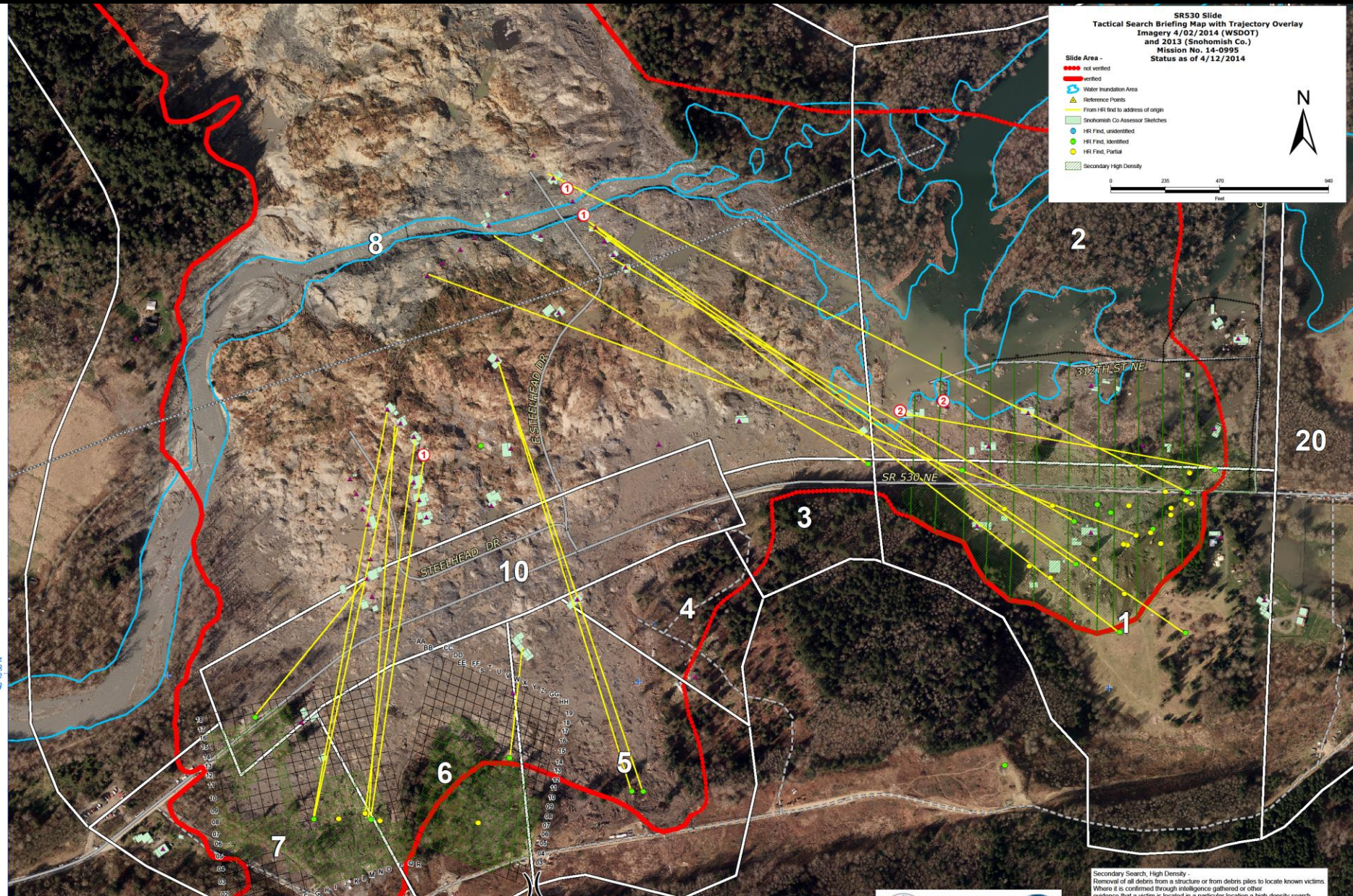
Search Planning

- Initial Access was on leading edge of debris flow by chance
- Initial Finds were on leading edge of debris flow
- Housing material was primarily observed at leading edge
- Soil & water conditions prohibited extensive travel further out
- Geologists eventually guided search toward edge where the trees were at
- Thought was the houses were pushed in front
- Behavior can be likened to an avalanche – debris on the leading edge

Initial Effort to Determine Trajectories

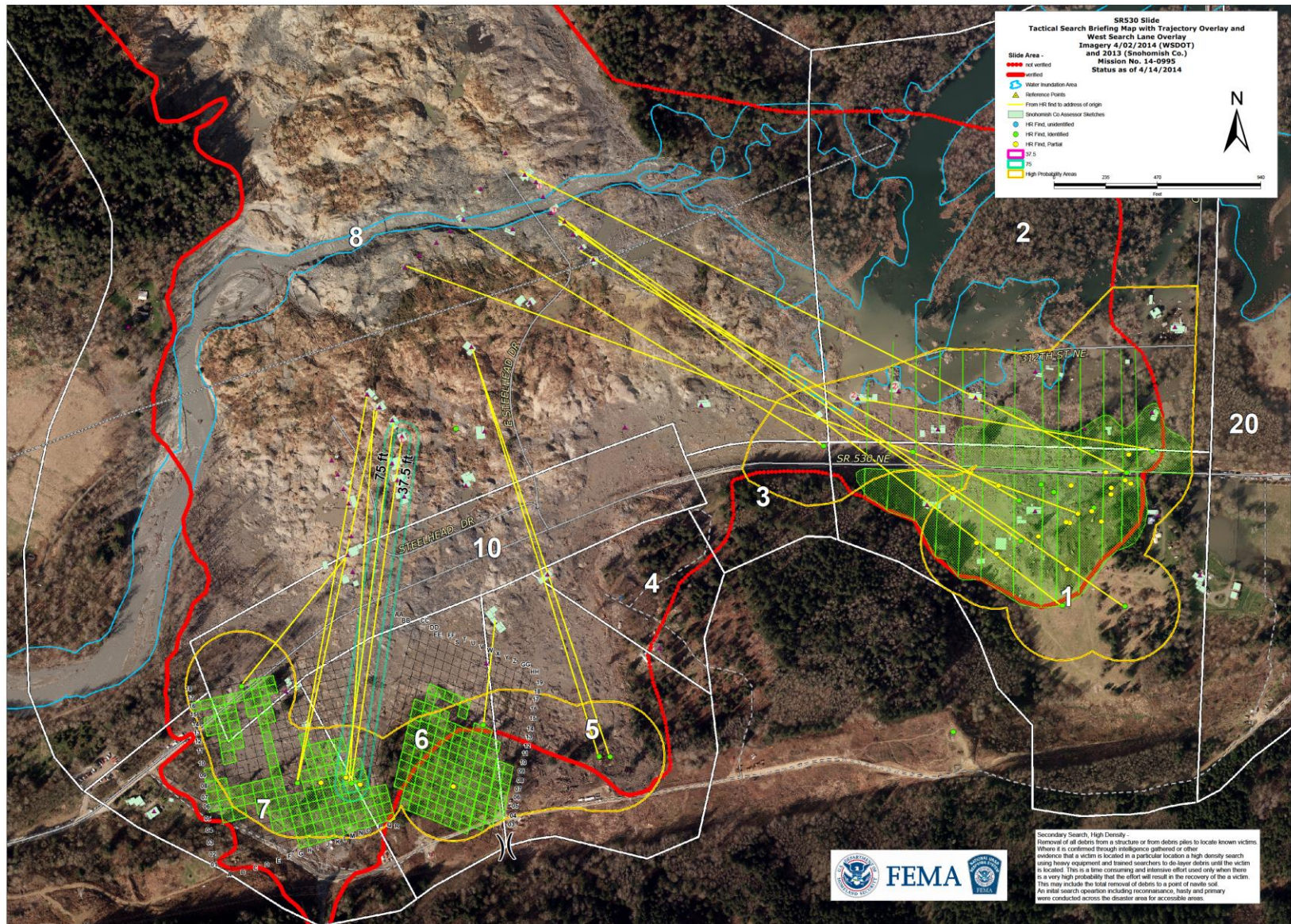
- If we can figure out who the victim we found was, we can tie them back to where they came from and predict where to focus our search
- Initially done manually through connections with law enforcement agencies – tying license plates to property owners
- Later done with HR information via ME

Incident Organization - Trajectories



Search Operations - Planning

SENSITIVE DATA - NOT FOR PUBLIC DISPLAY



SENSITIVE DATA - NOT FOR PUBLIC DISPLAY

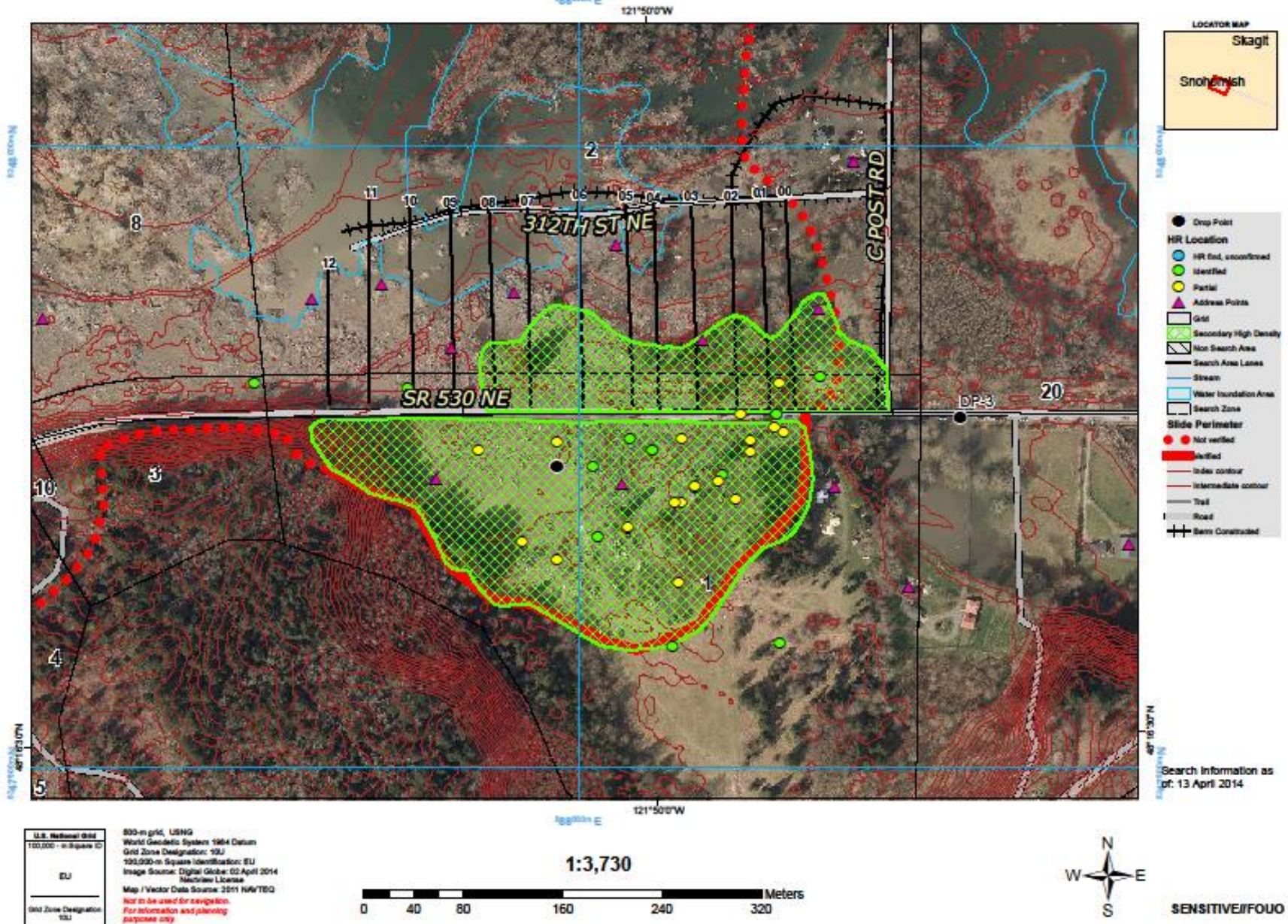
Document Control Number:

Search Operations Planning High Density

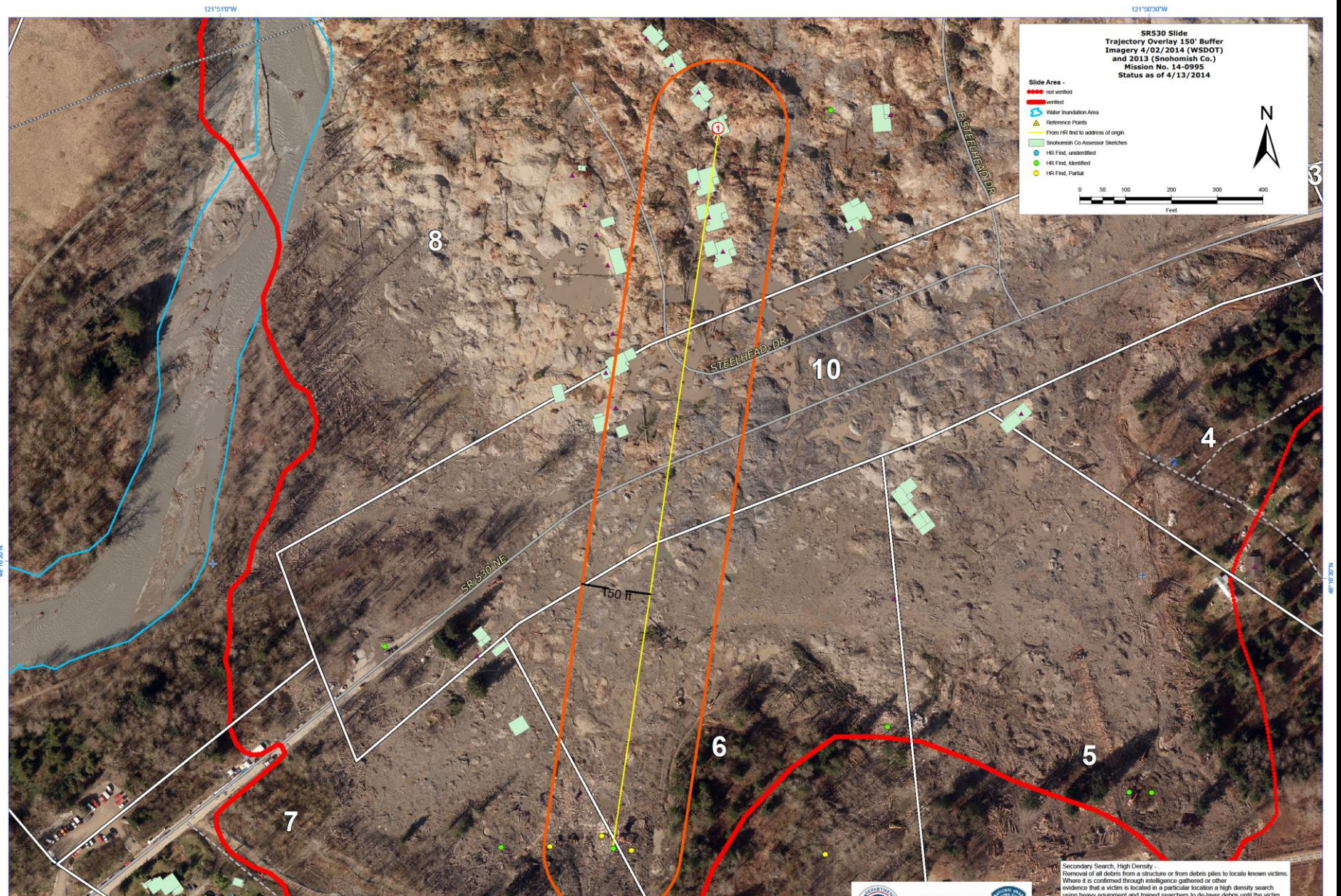


SR530 Slide Search Zone 1 / 2

SENSITIVE//FOUO



Incident Organization – Focusing the Search



Documentation

Documentation

Walt White

Scotty SMFD

Jim [Signature]



LIFE SAVER AWARD PRESENTED TO **WA TF-1 Plans Shop**

FOR BAILING OUT THE CA TF-7 PLANS SHOP
WASHINGTON STATE ROUTE 530 SLIDE
APRIL 2014



Aaron Webster
SMFD

Jeff Metzinger
Sacramento County
Airports














Documentation – GPS Downloads



Documentation - GPS



Documentation

Symbol	Description	Total Number of Symbols in all Sheets
	Extra 23	69
	Victim Detected	40
	Confirmed Victim	24
	Extra 24	24
	Human Remains	20
	Assisted	12
	Evacuated	11
	Animal Issue	8
	Hazardous Material Incident	7
	Confirmed Victim Removed	6
	Structure Failed	5
	Structure Destroyed	4
	Structure Damaged	3
	Emergency Food Distribution Center	3
	Helicopter Landing Site	3
	Flood/Water Level	2
	Route Blocked	2
	Structure No Damage	1

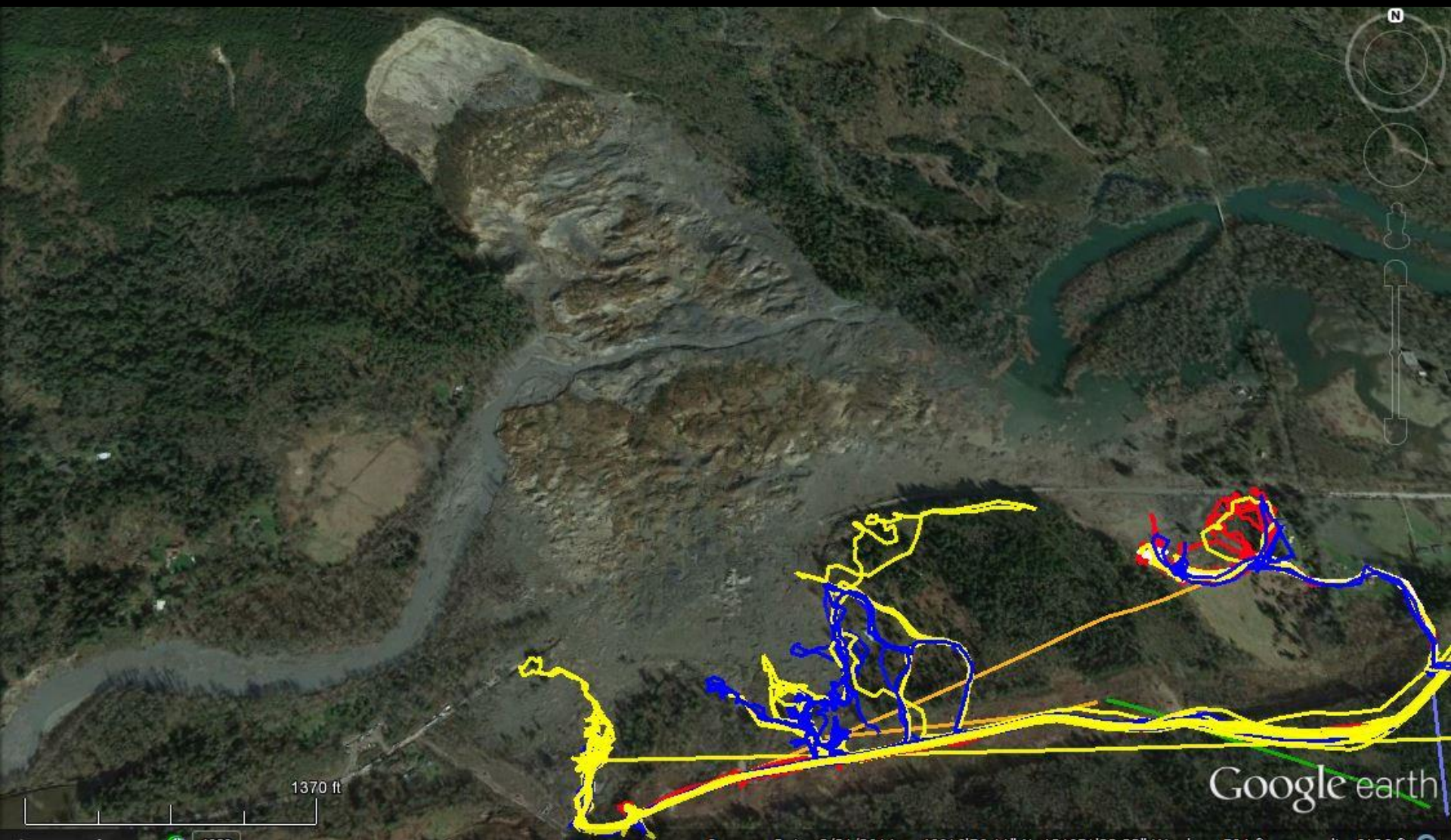
Search Operations

Primary Searches

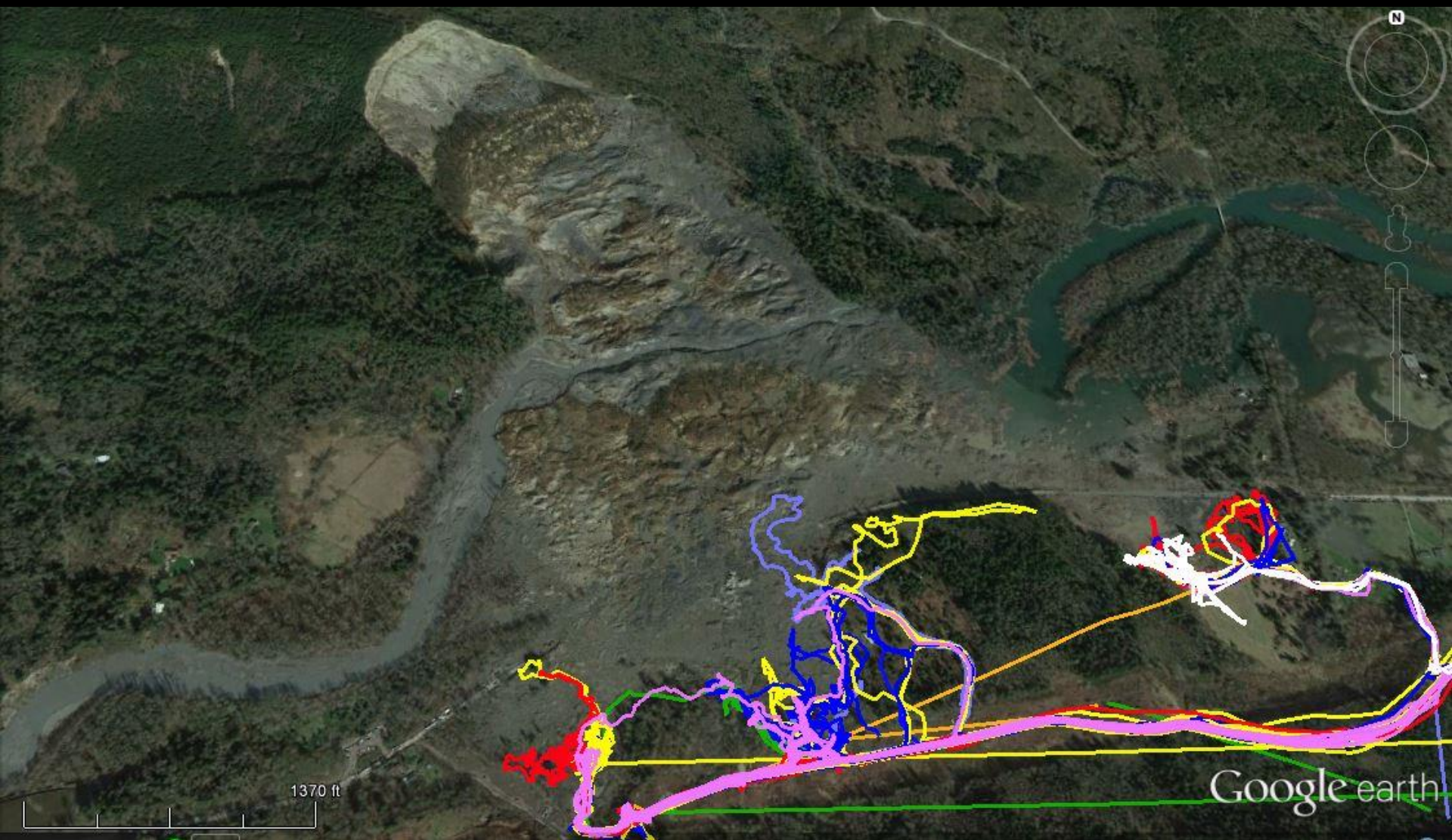
Search Progress 3/24



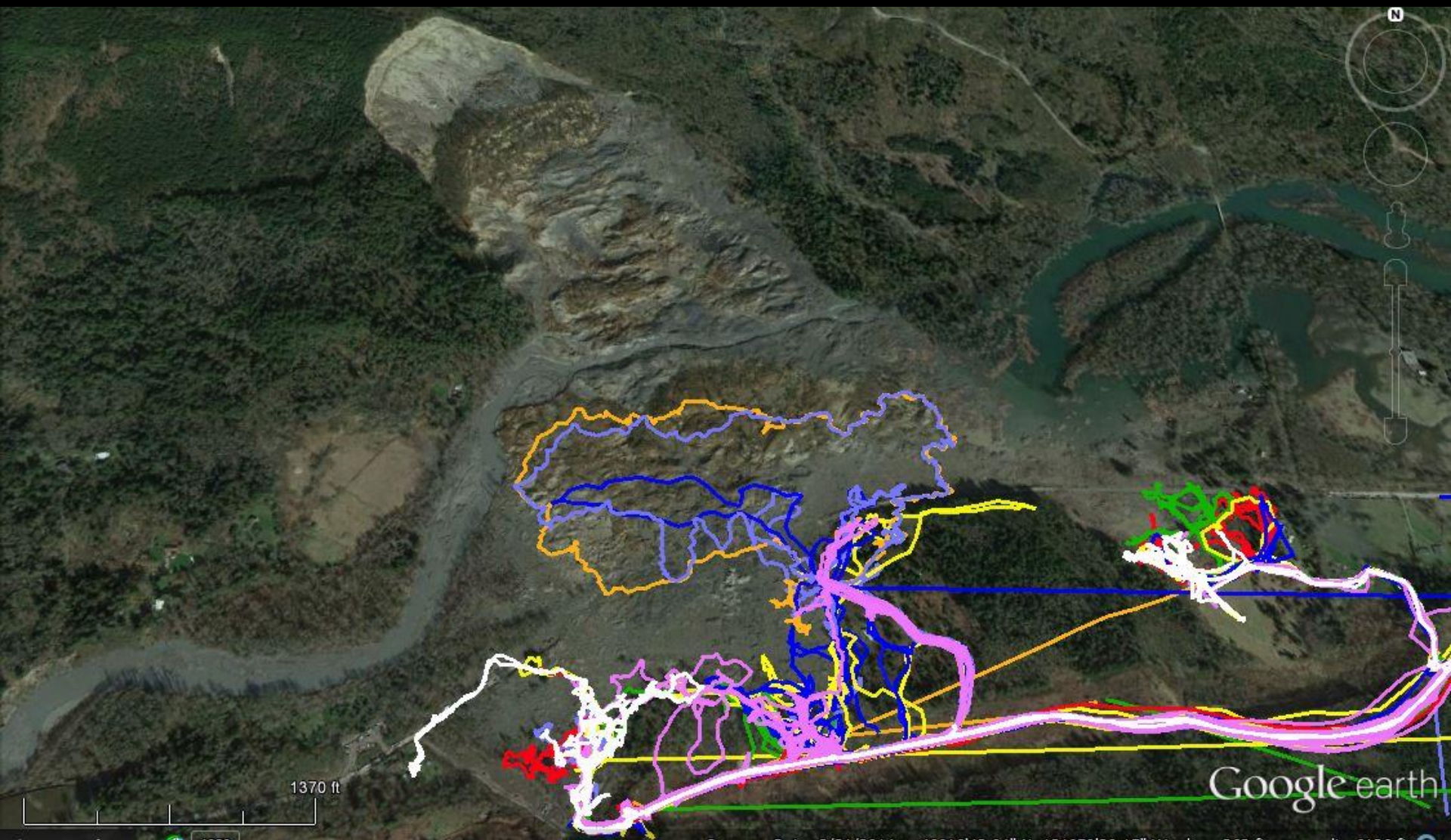
Search Progress 3/25



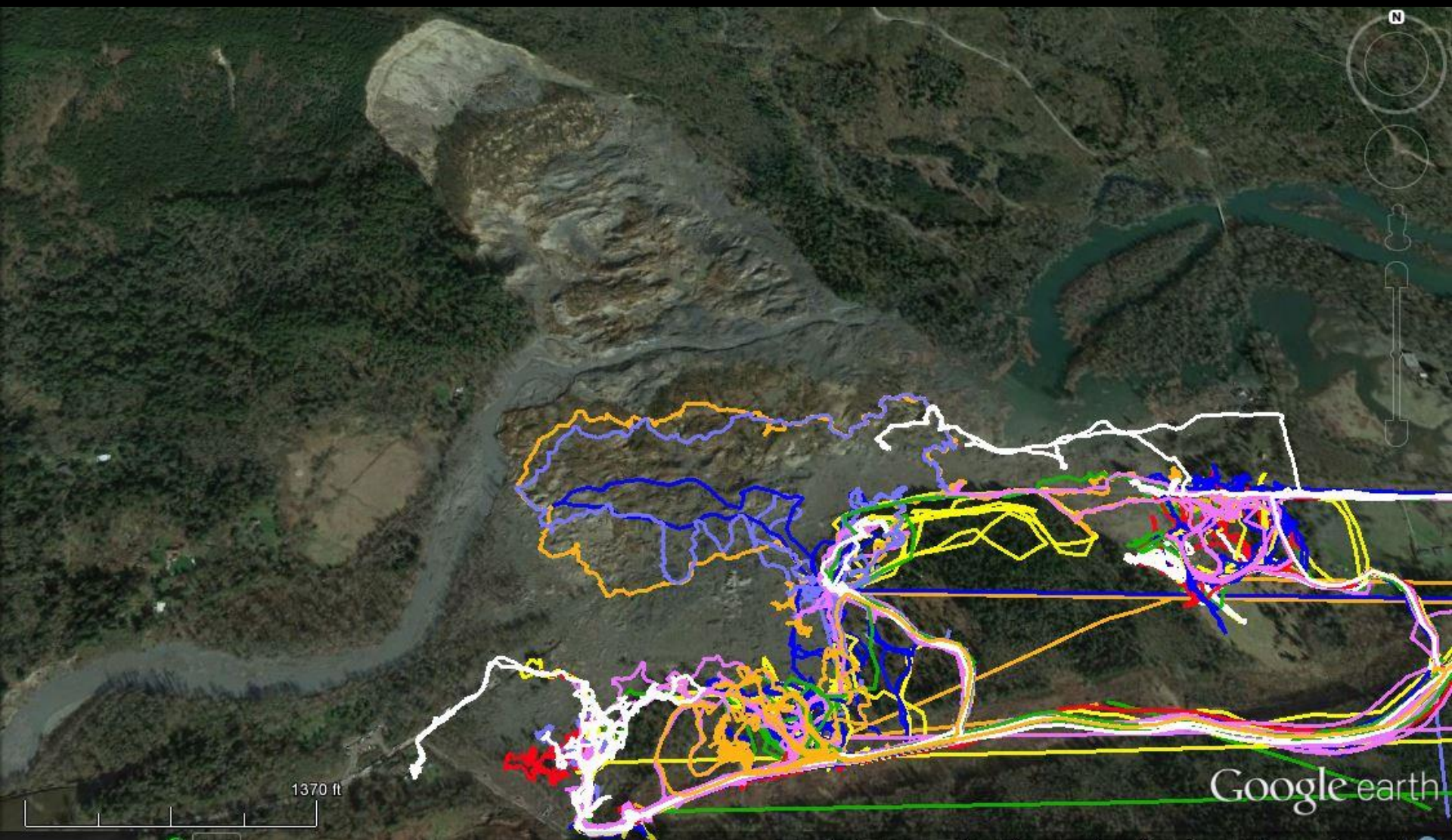
Search Progress 3/26



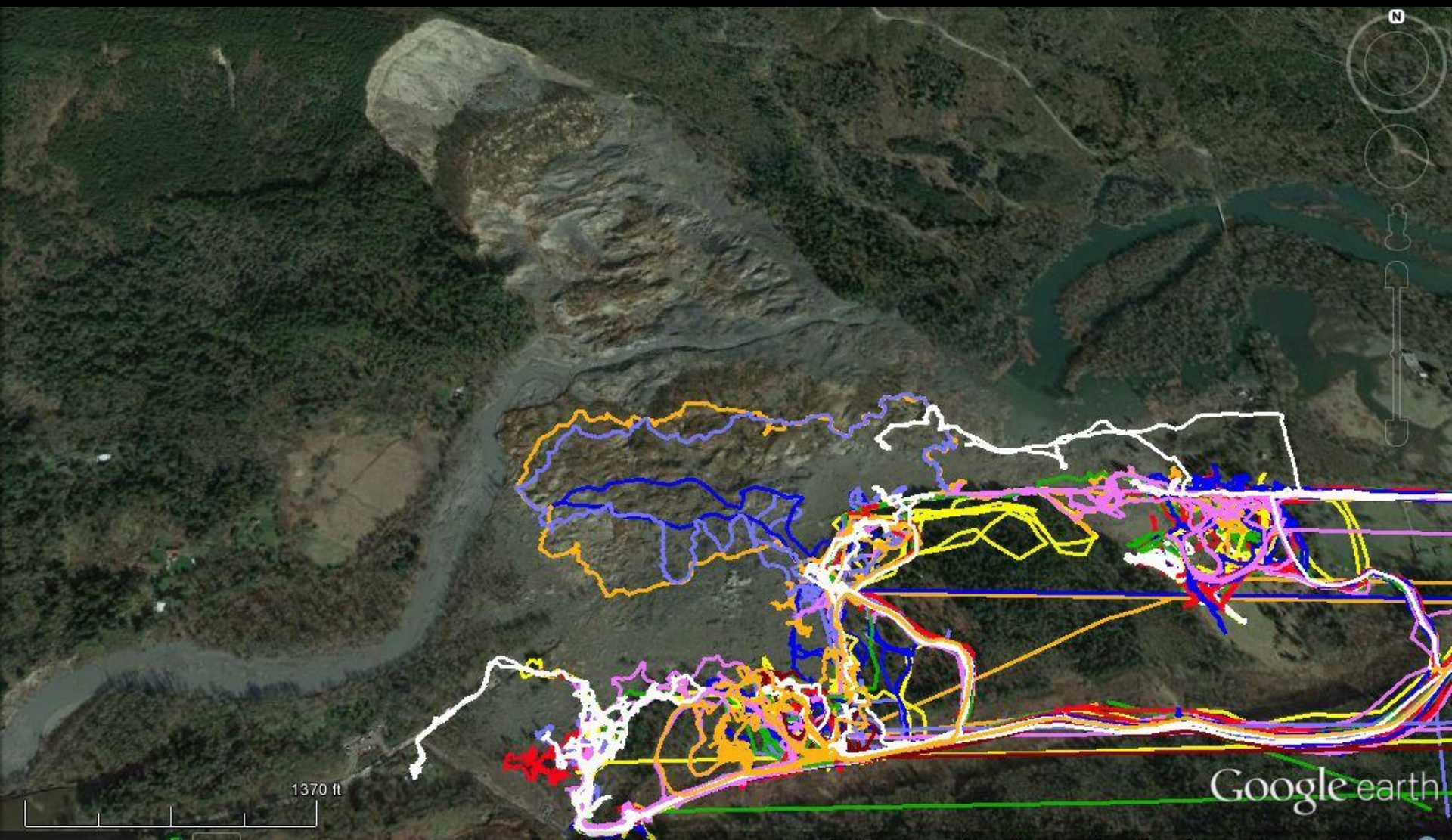
Search Progress 3/27



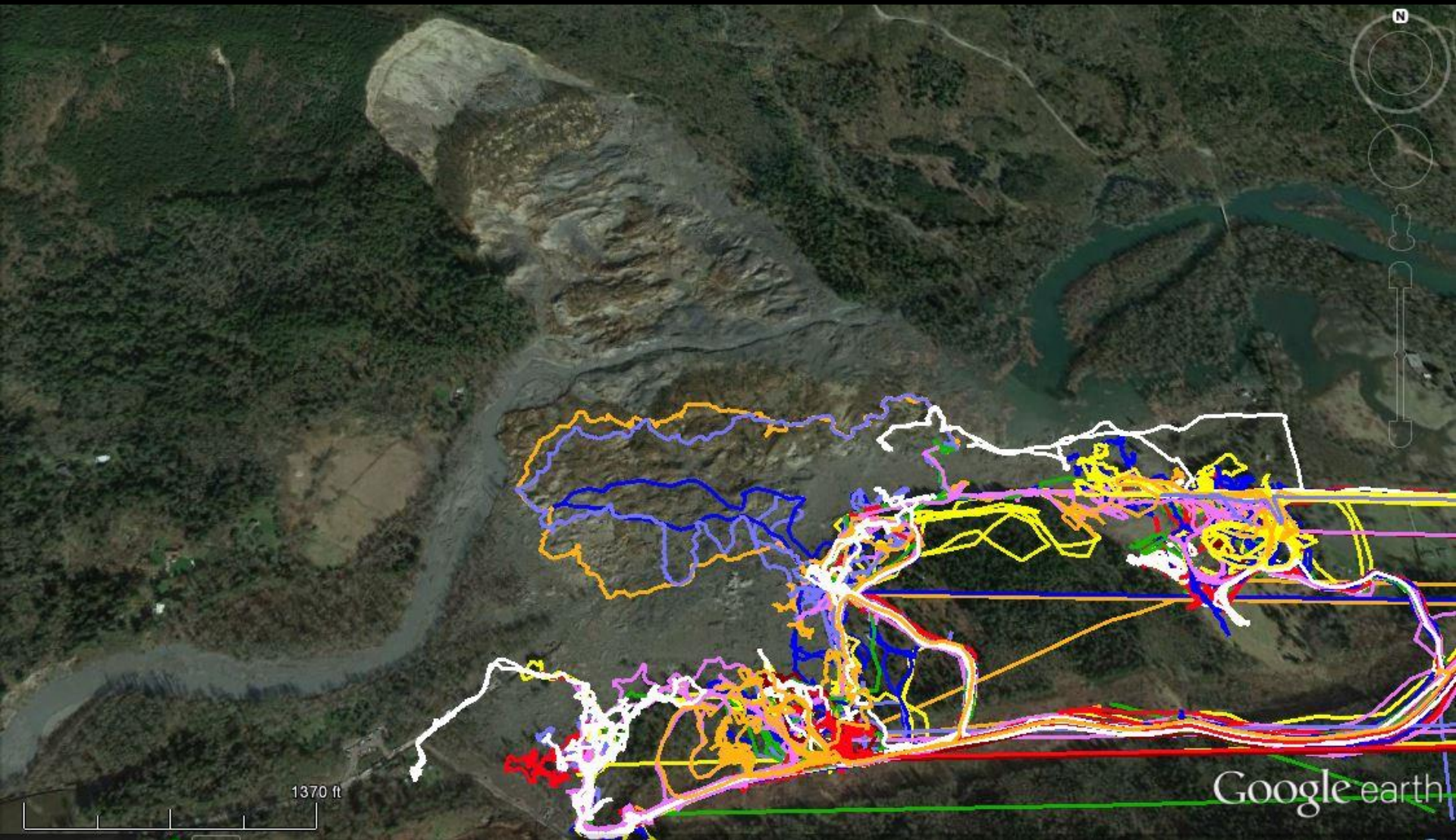
Search Progress 3/28



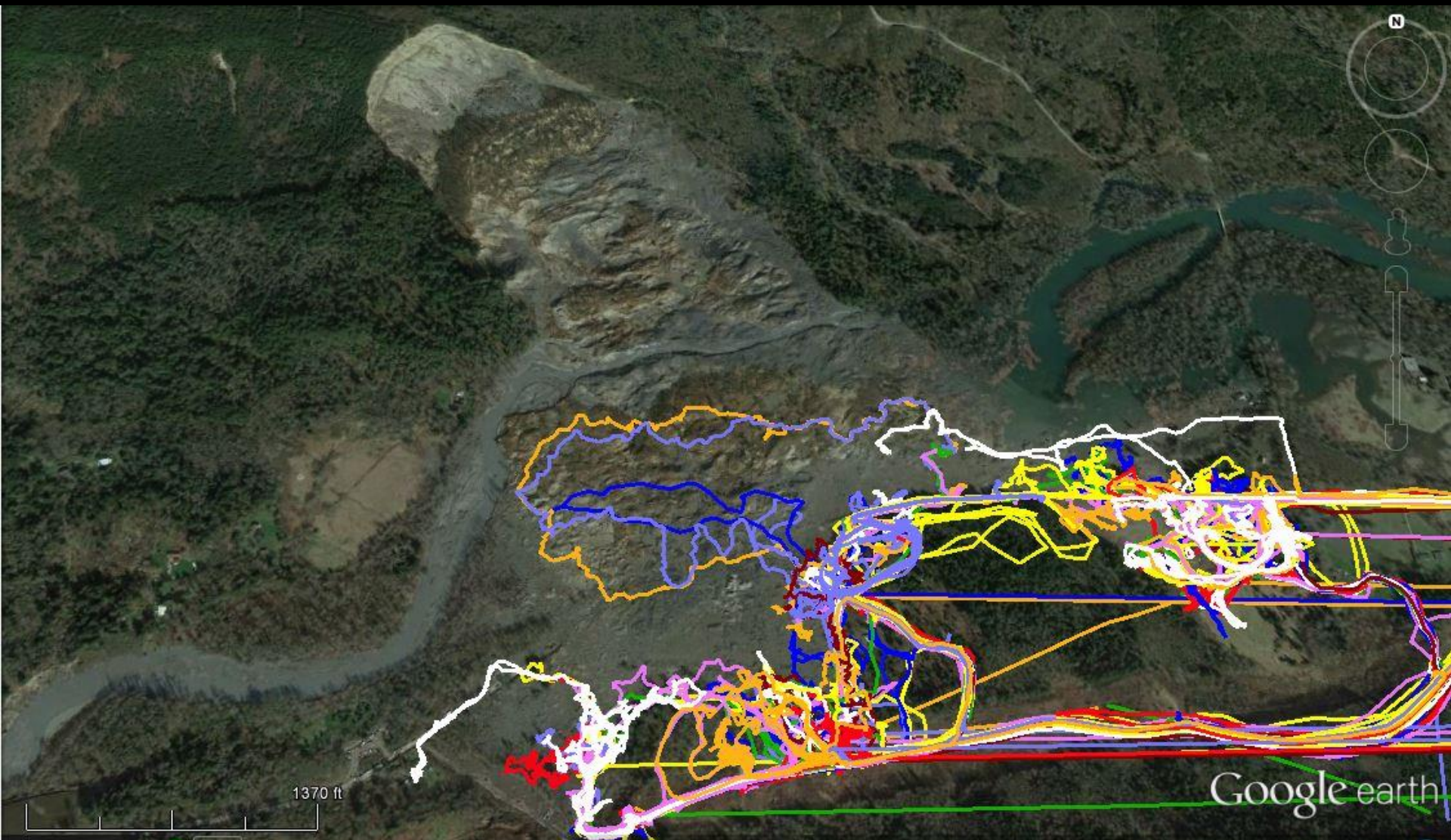
Search Progress 3/29



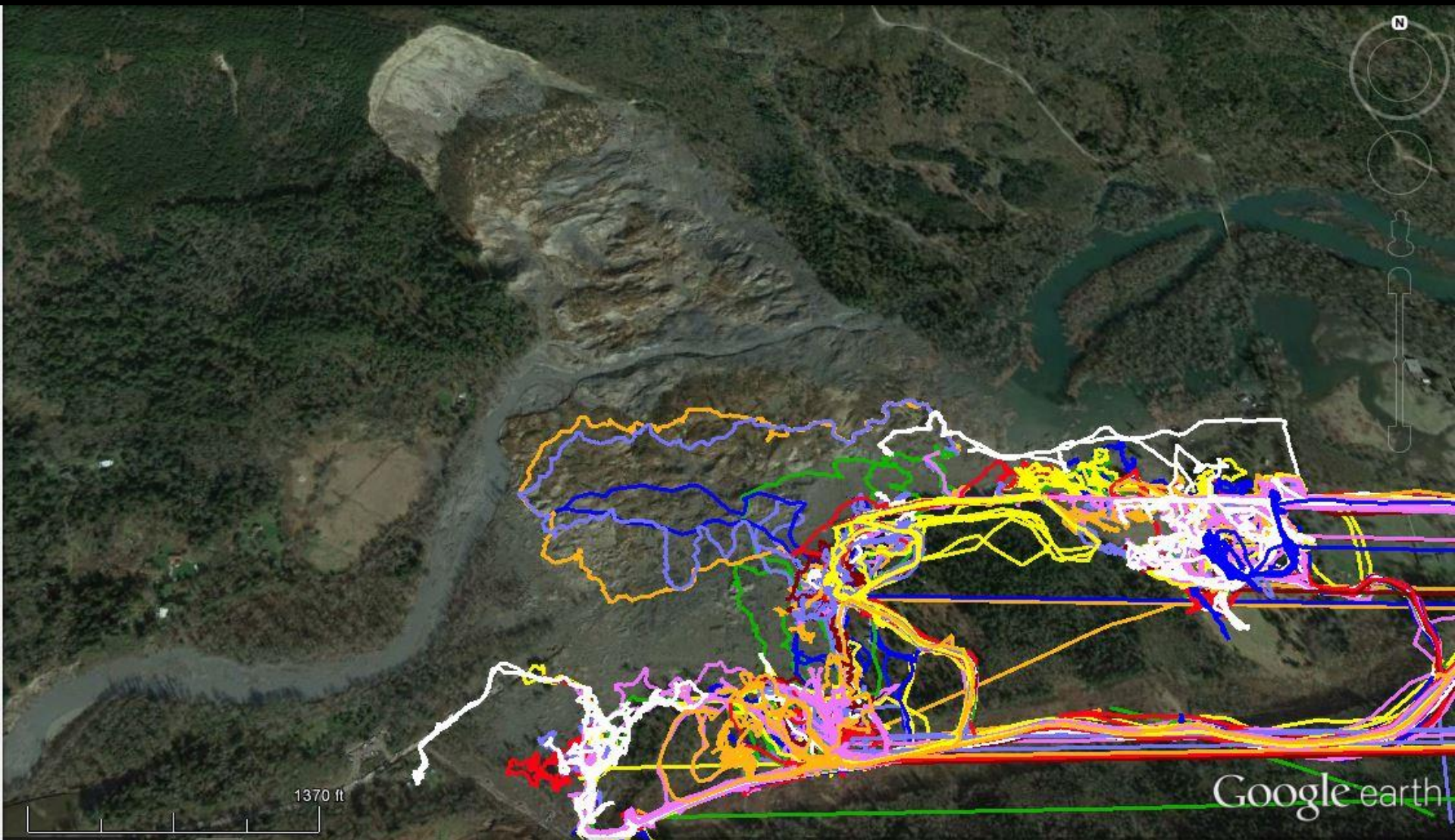
Search Progress 3/30



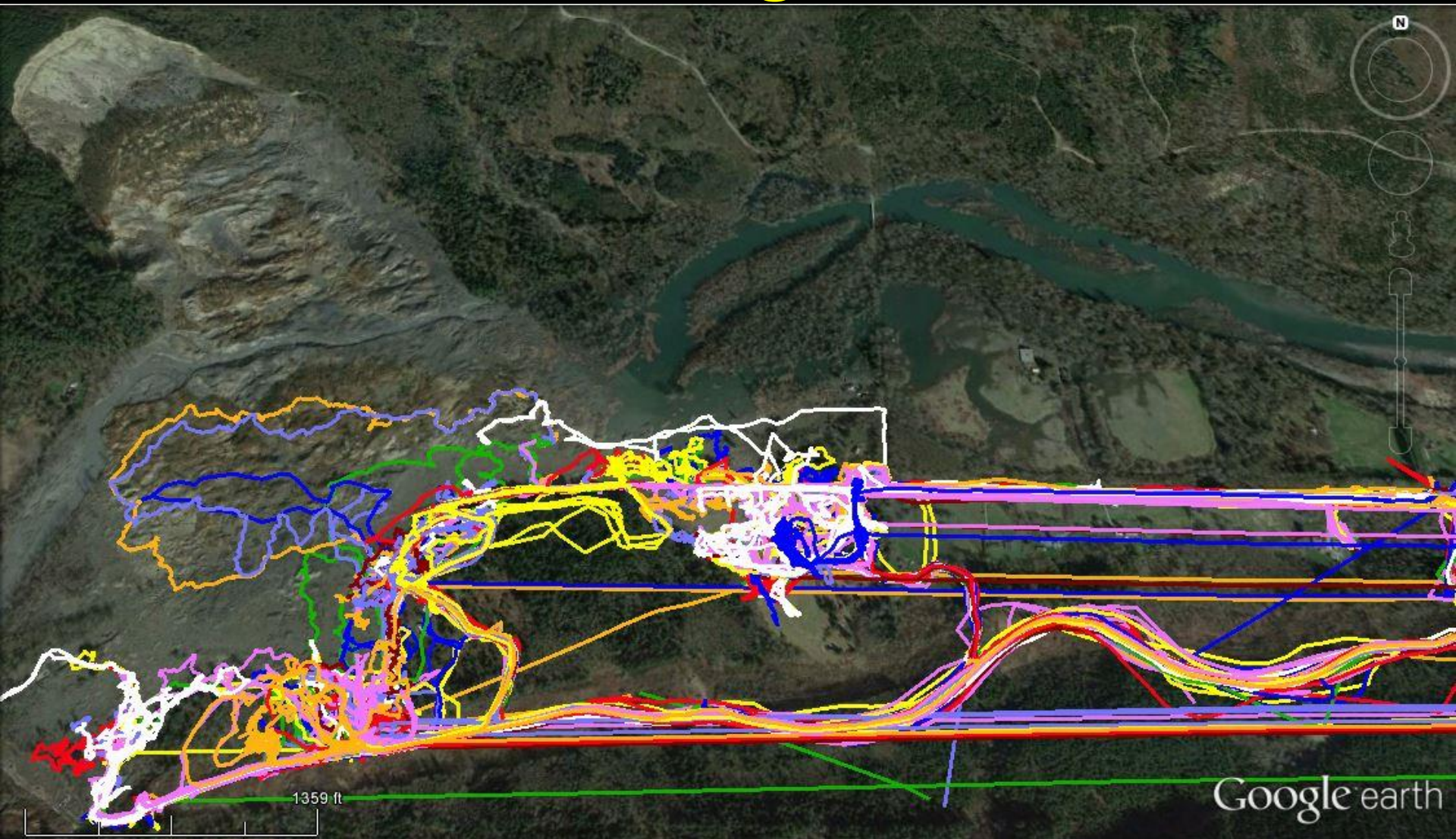
Search Progress 3/31



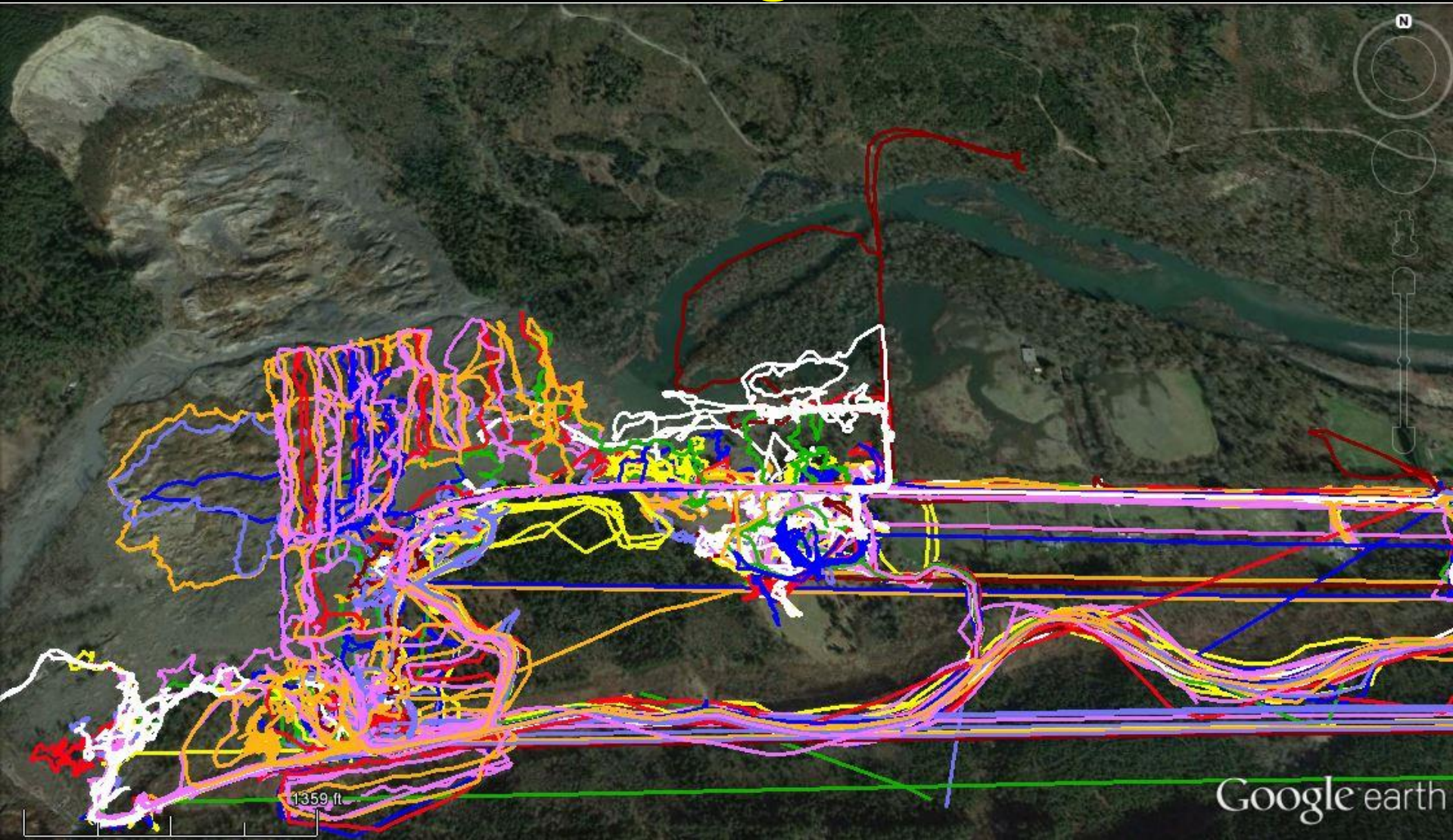
Search Progress 4/1



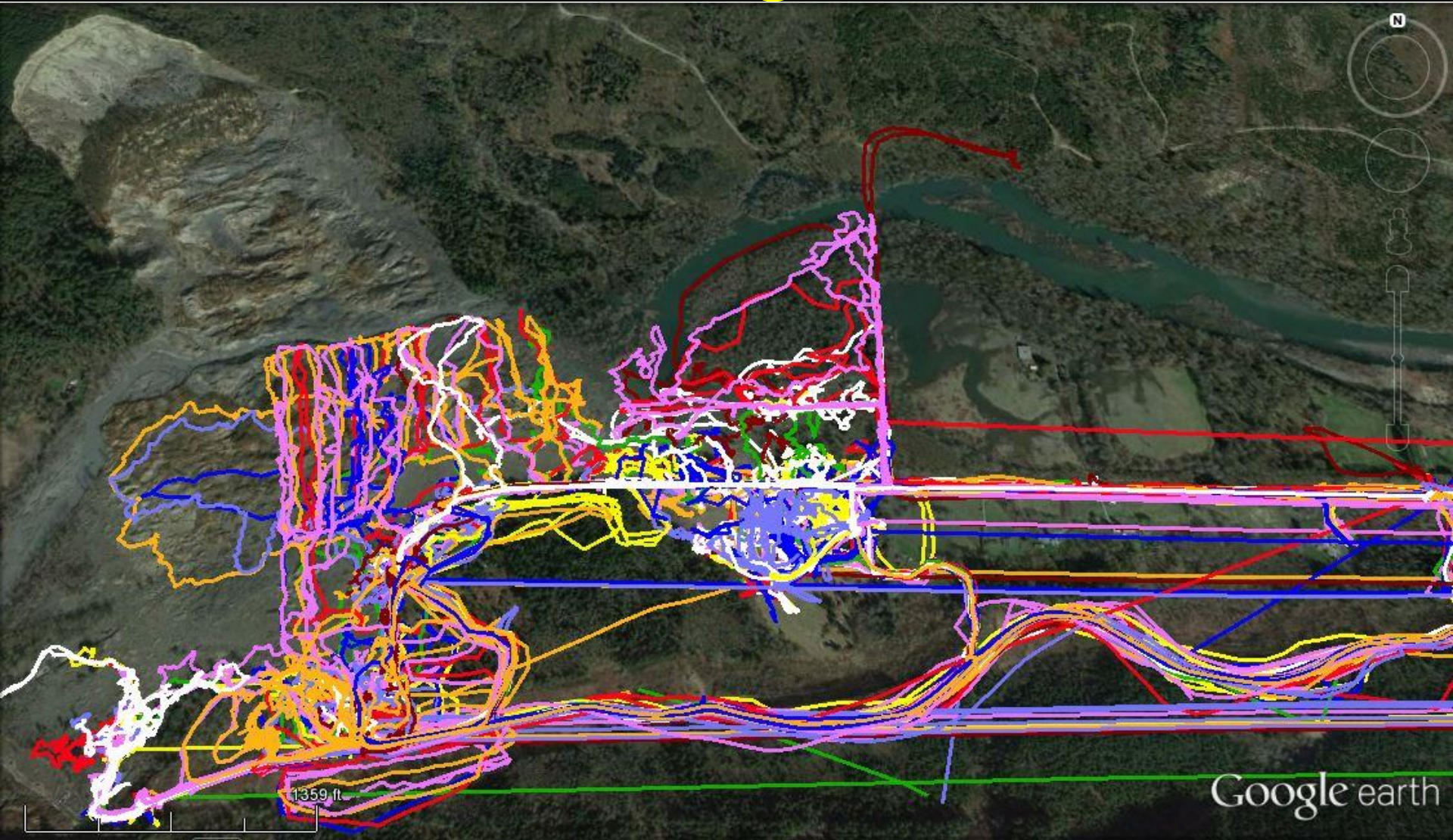
Search Progress 4/1



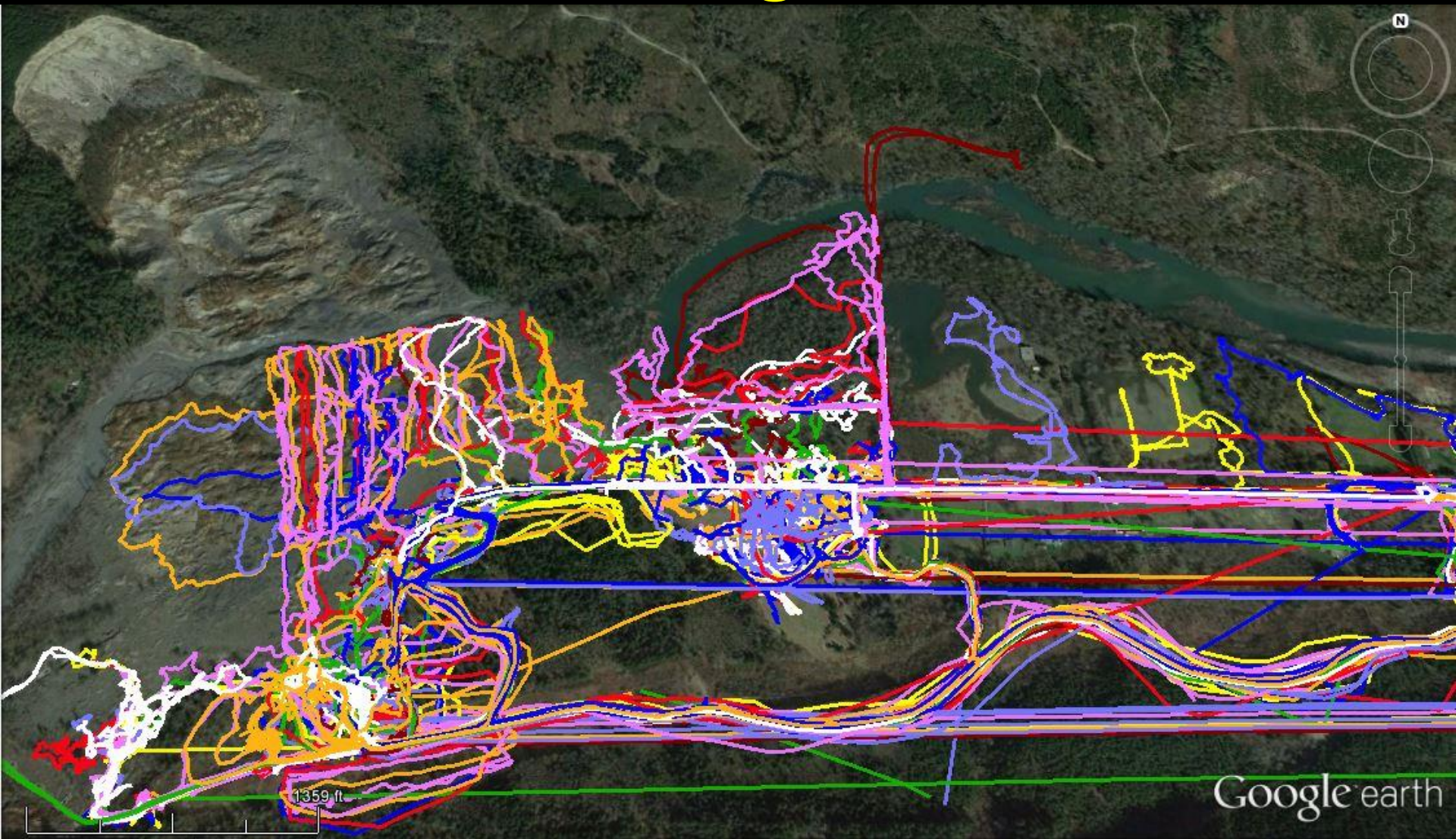
Search Progress 4/2



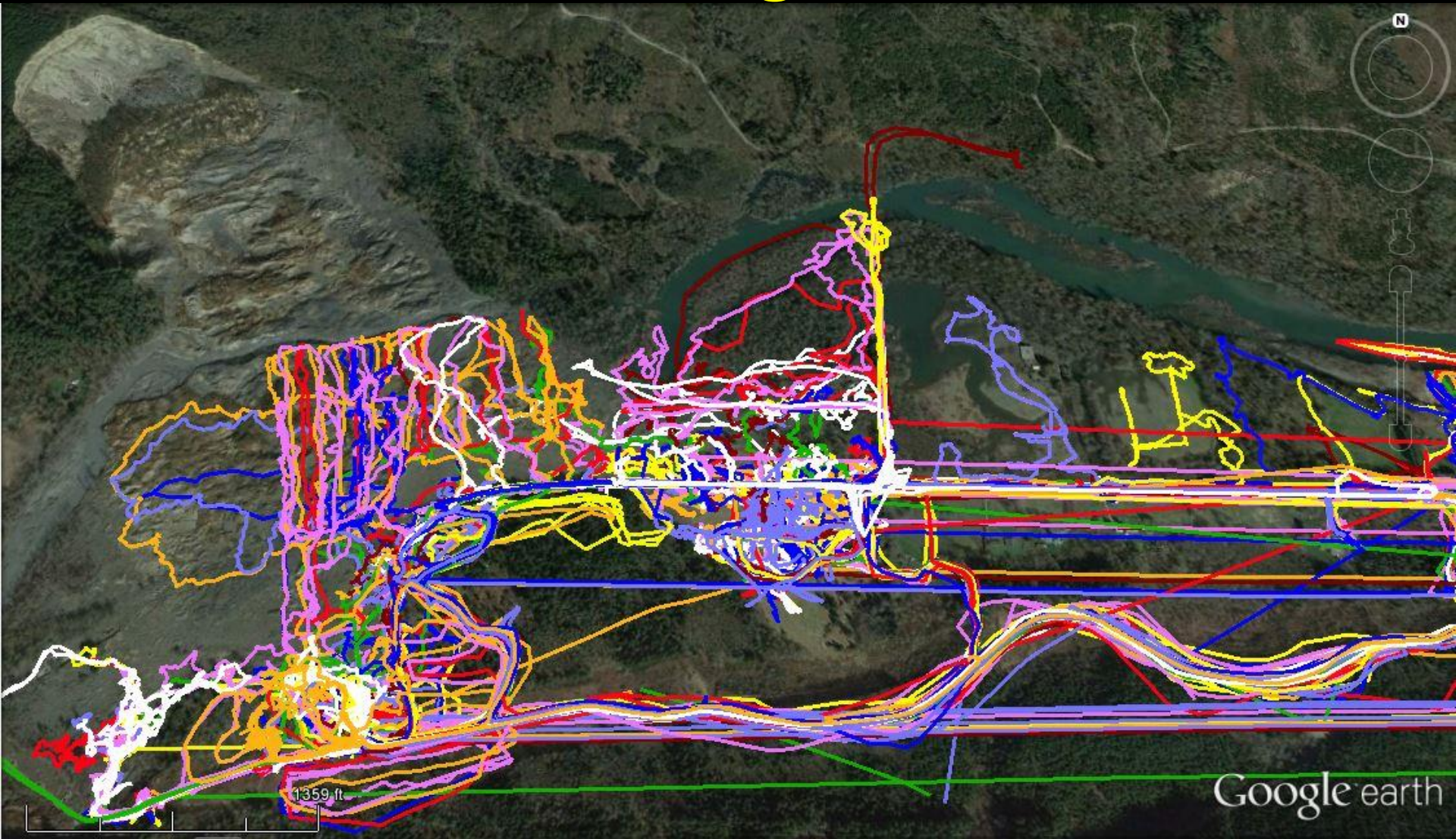
Search Progress 4/3



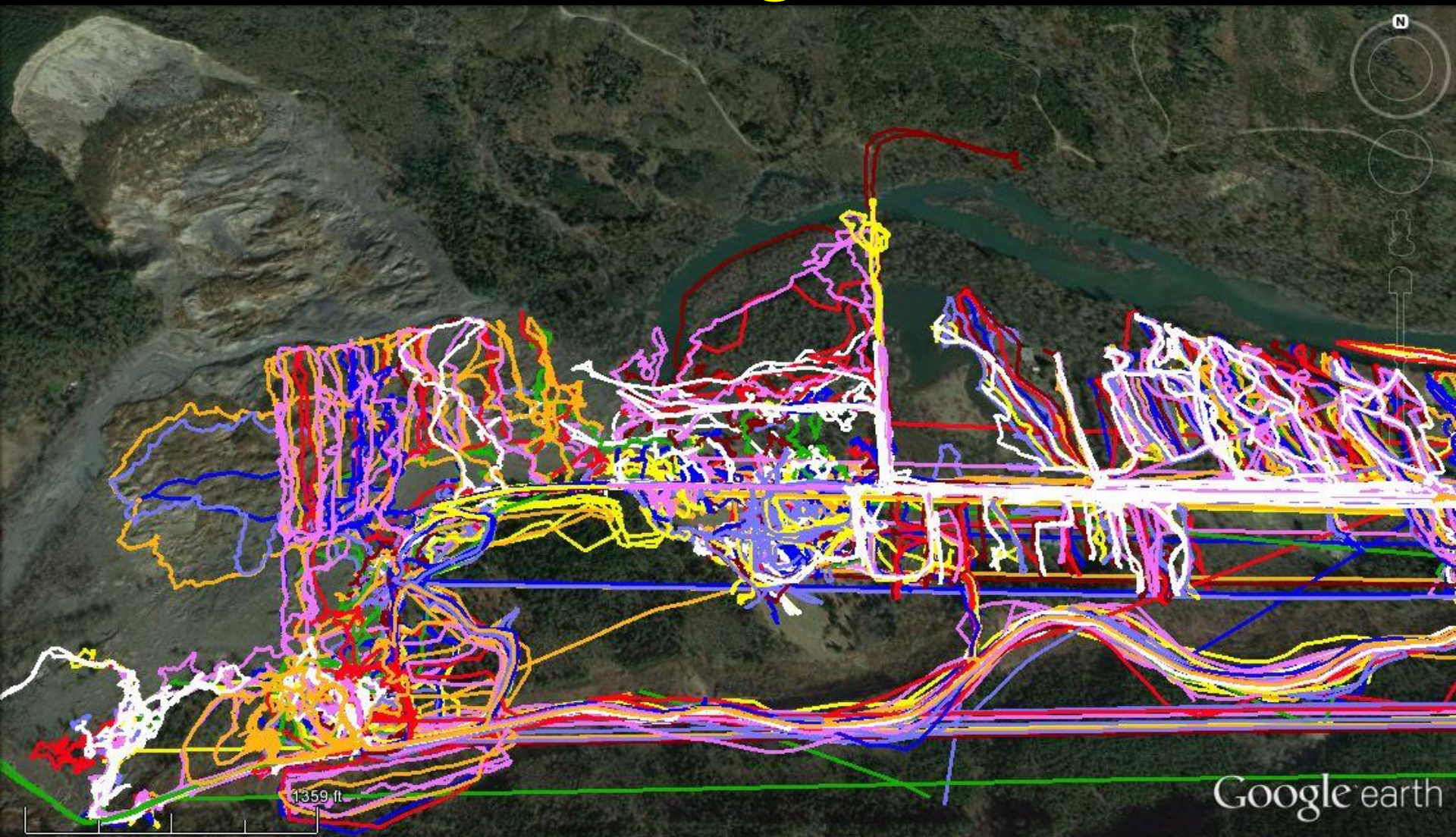
Search Progress 4/4



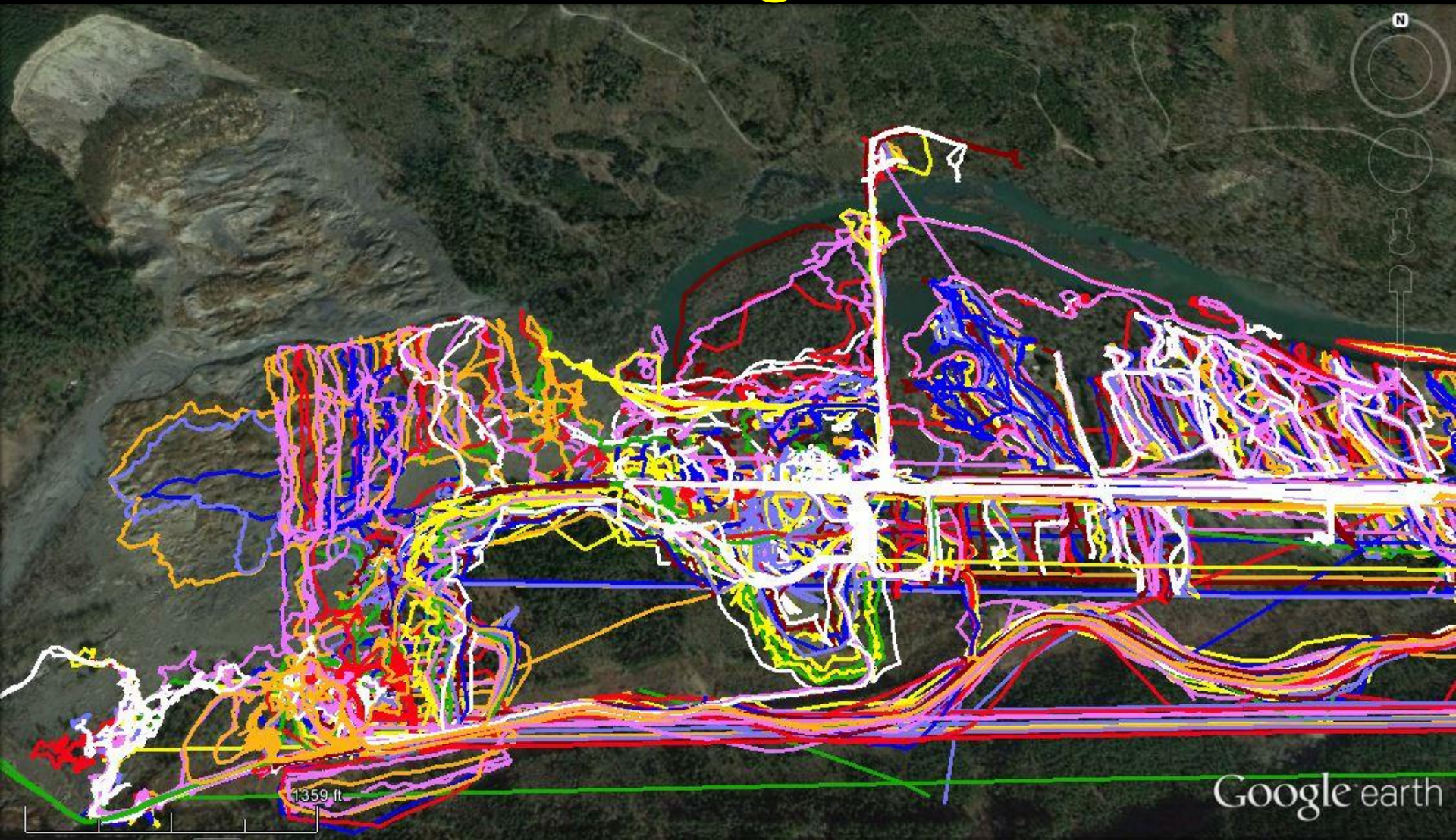
Search Progress 4/5



Search Progress 4/6



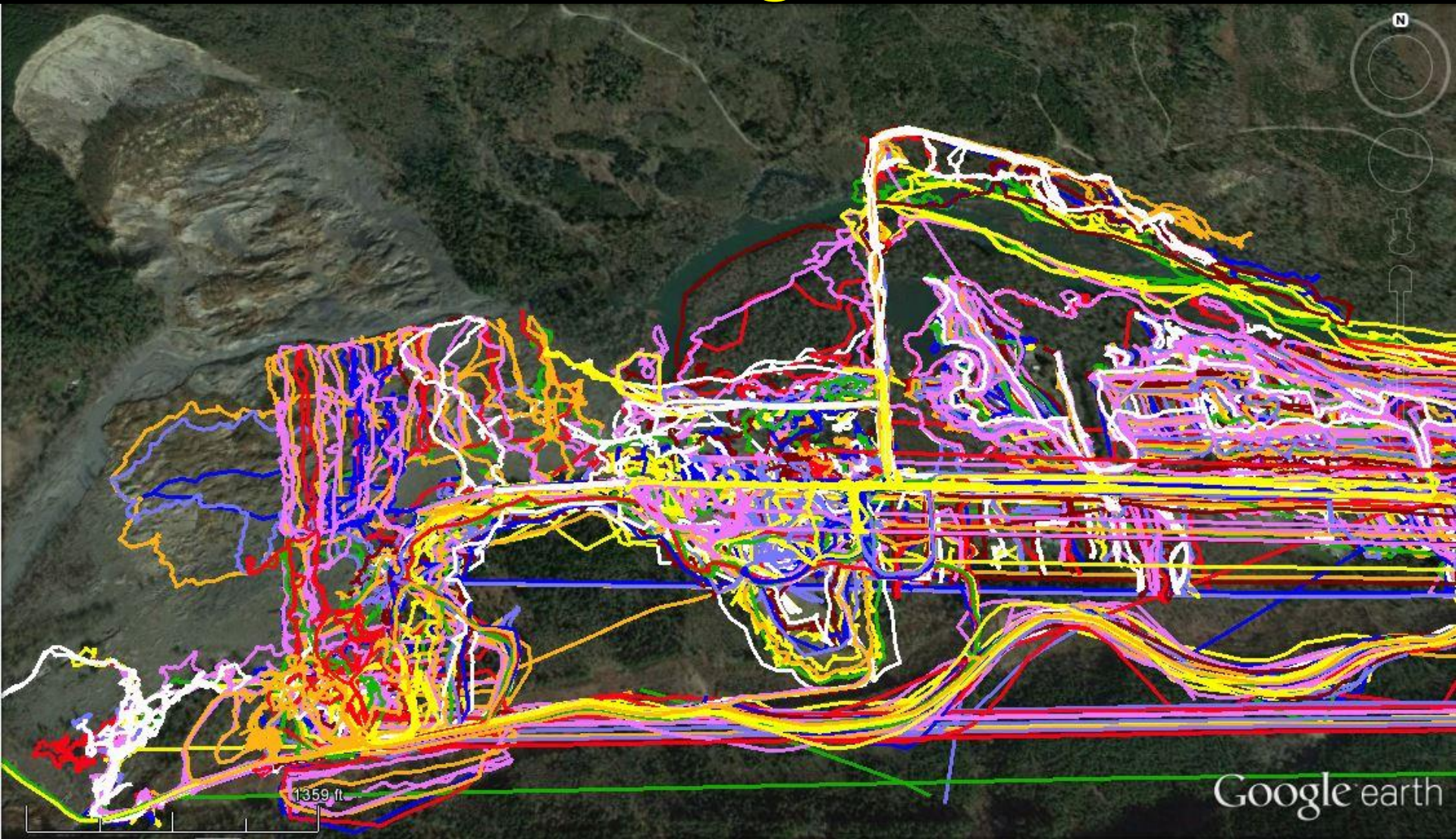
Search Progress 4/7



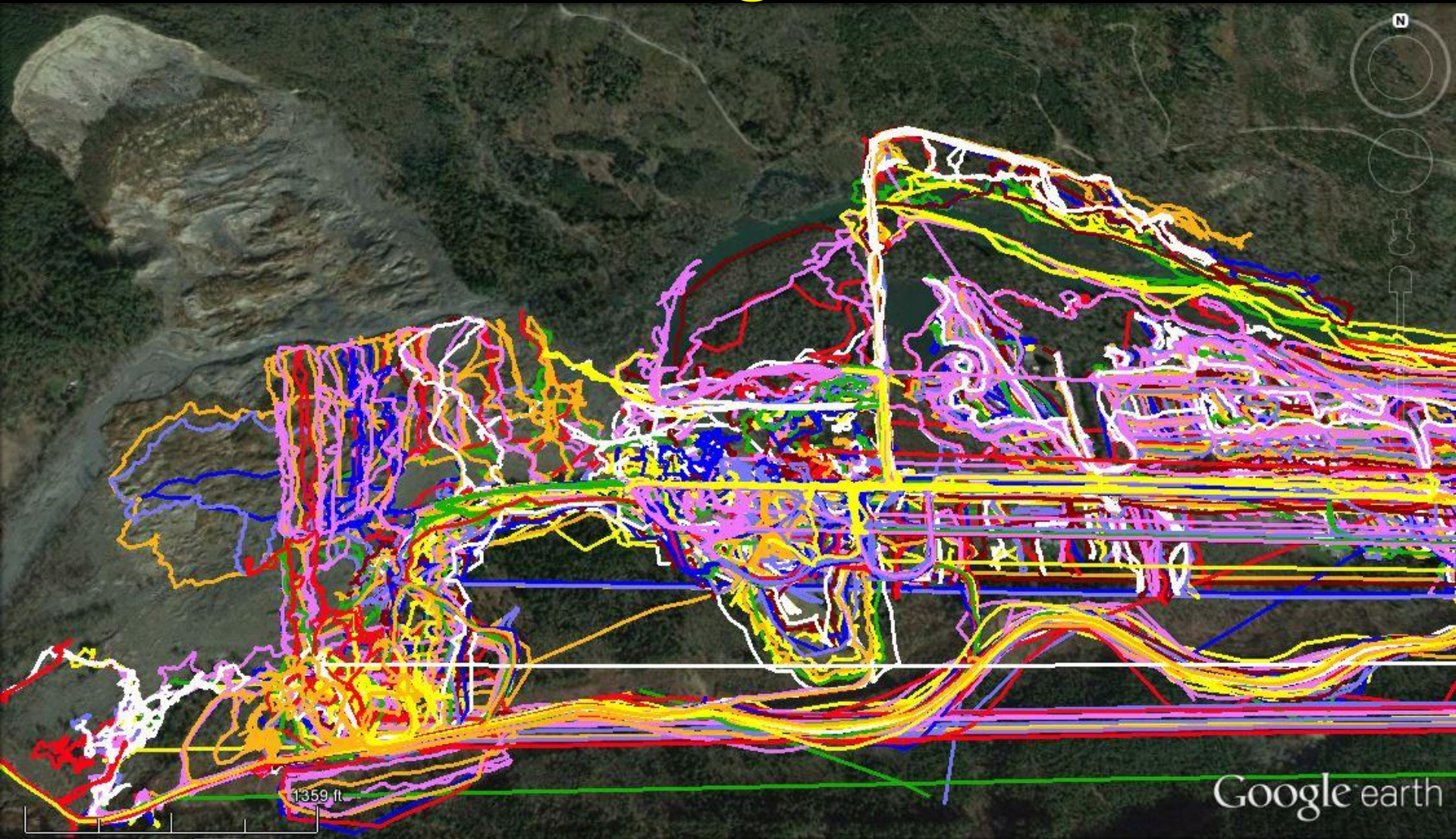
Search Progress 4/8



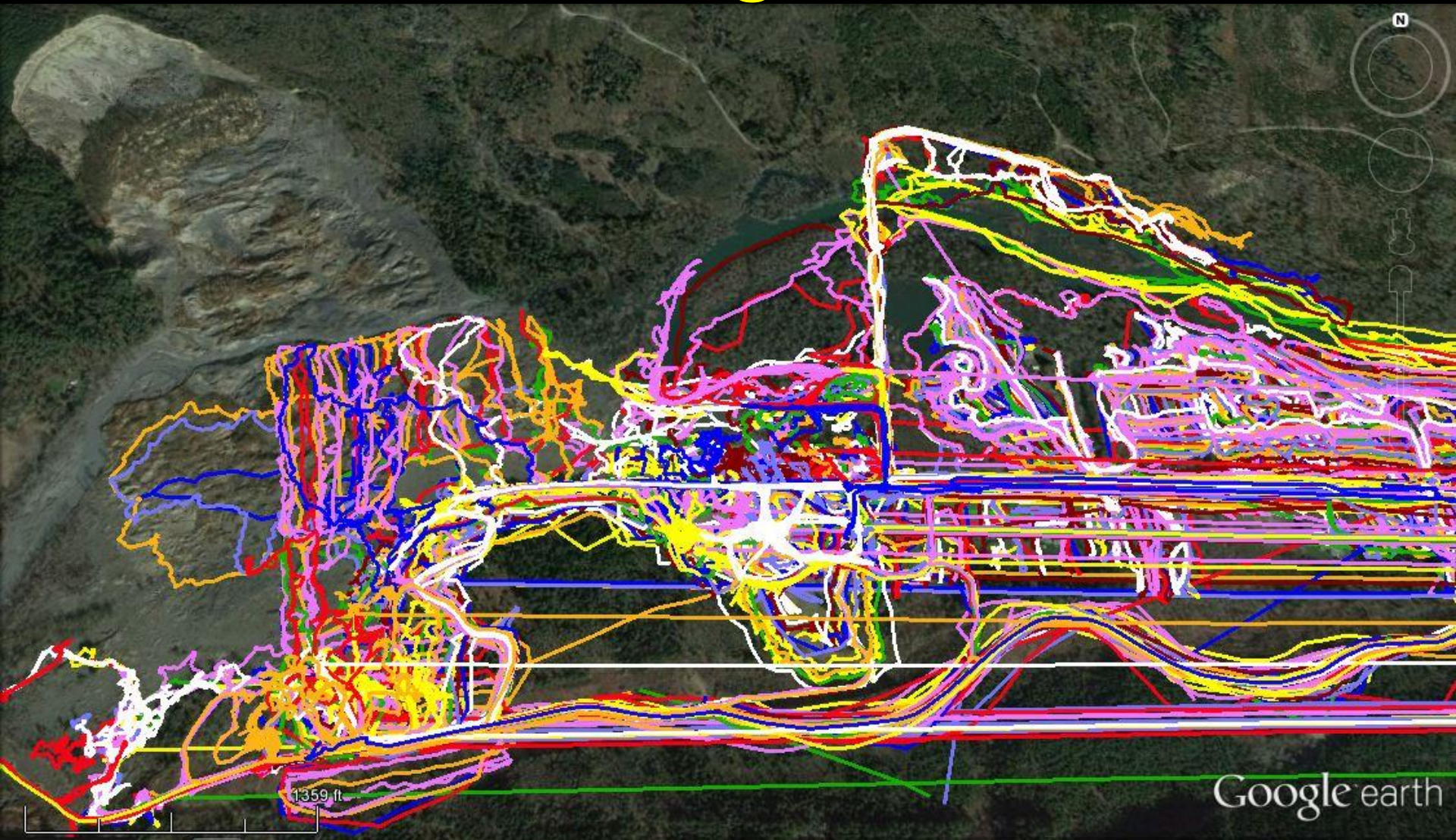
Search Progress 4/9



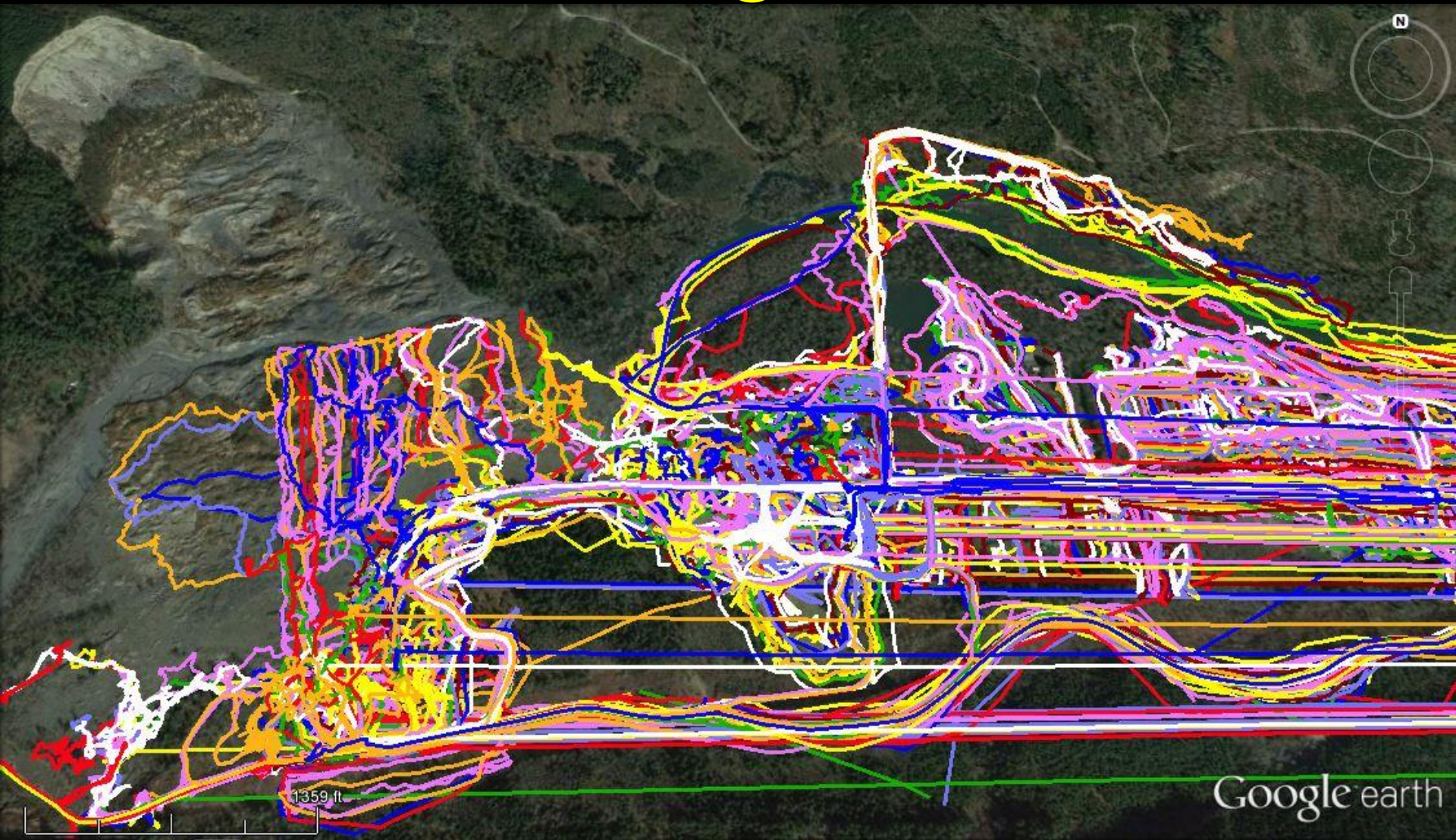
Search Progress 4/10



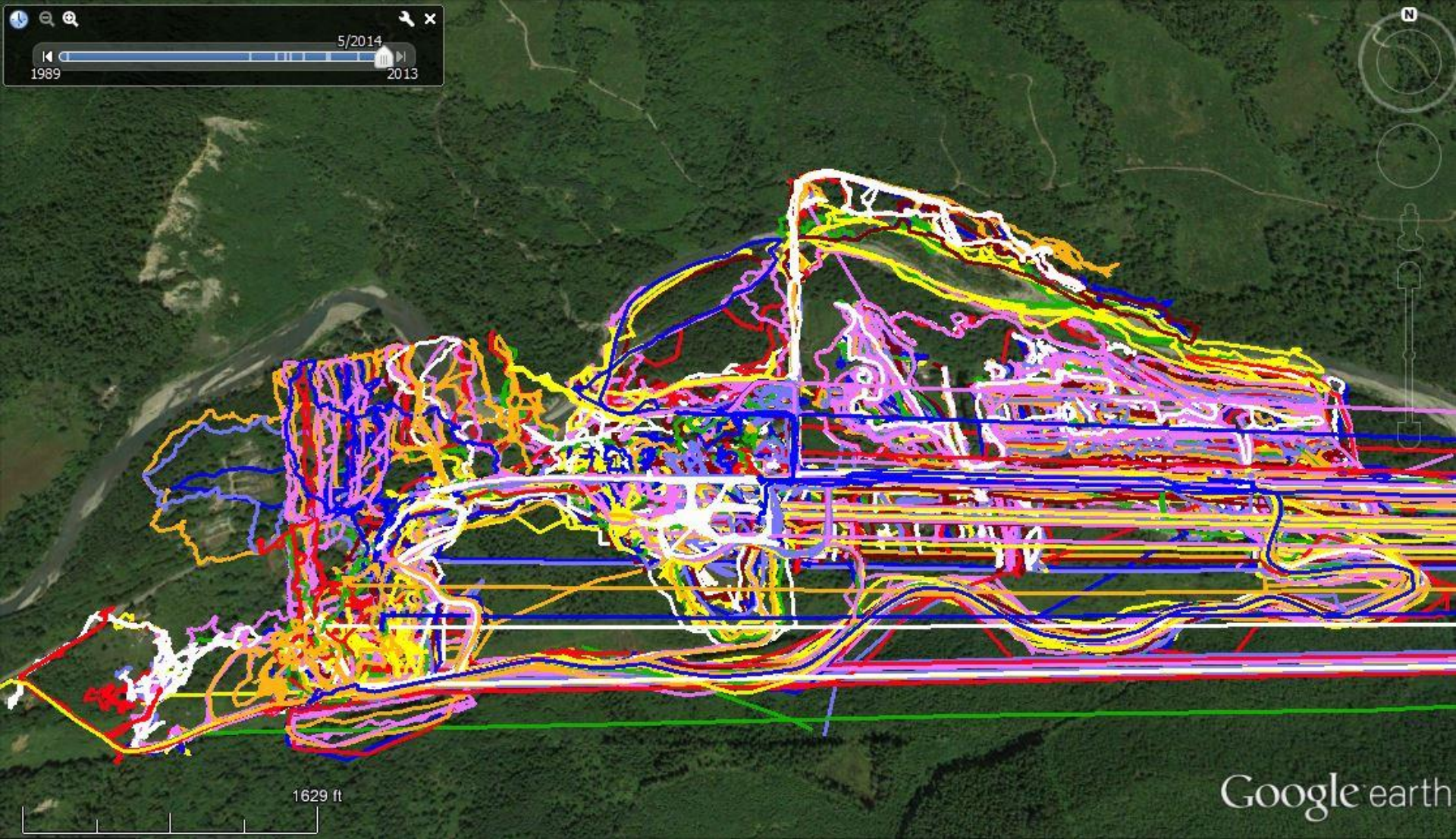
Search Progress 4/11



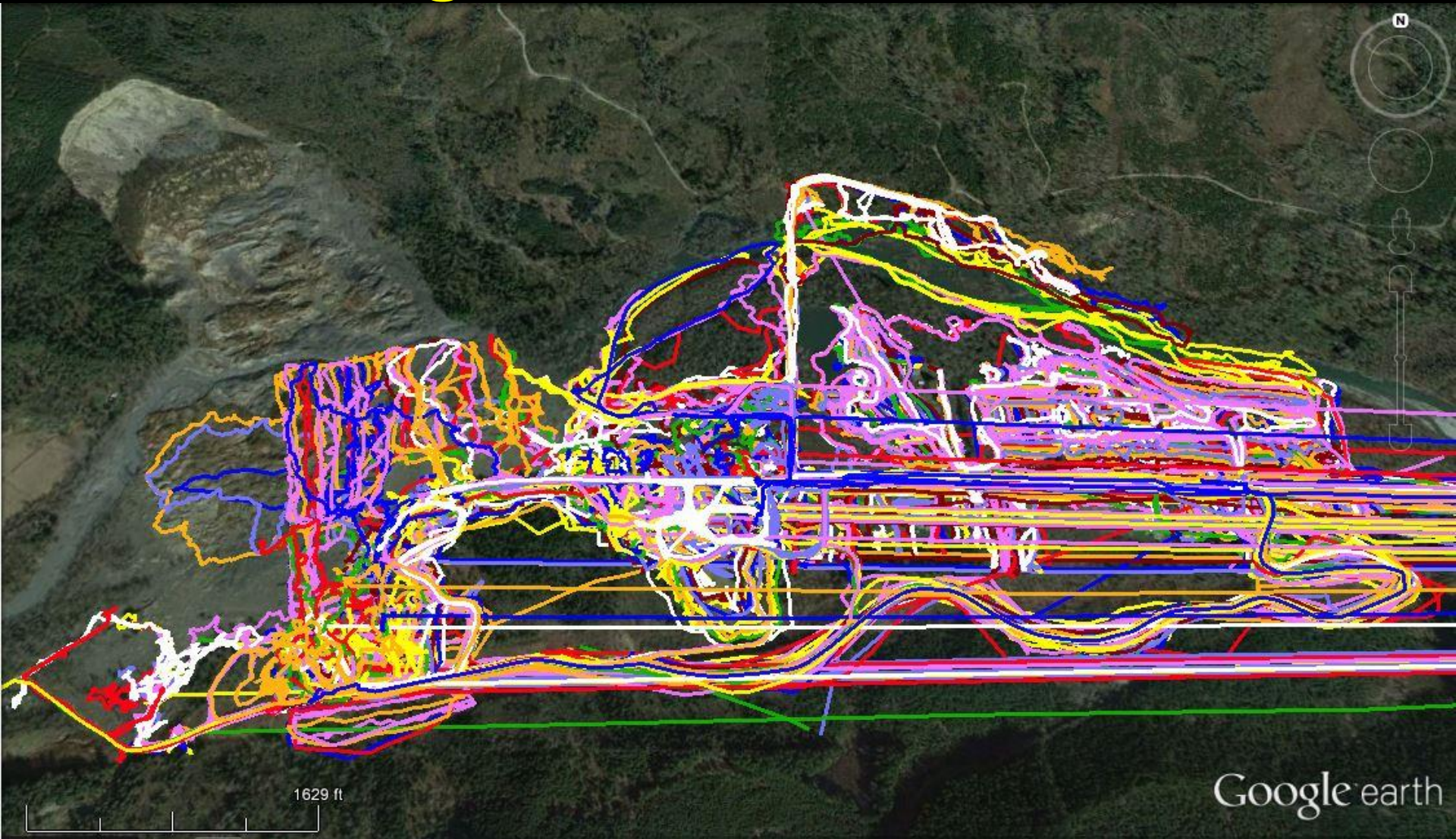
Search Progress 4/12



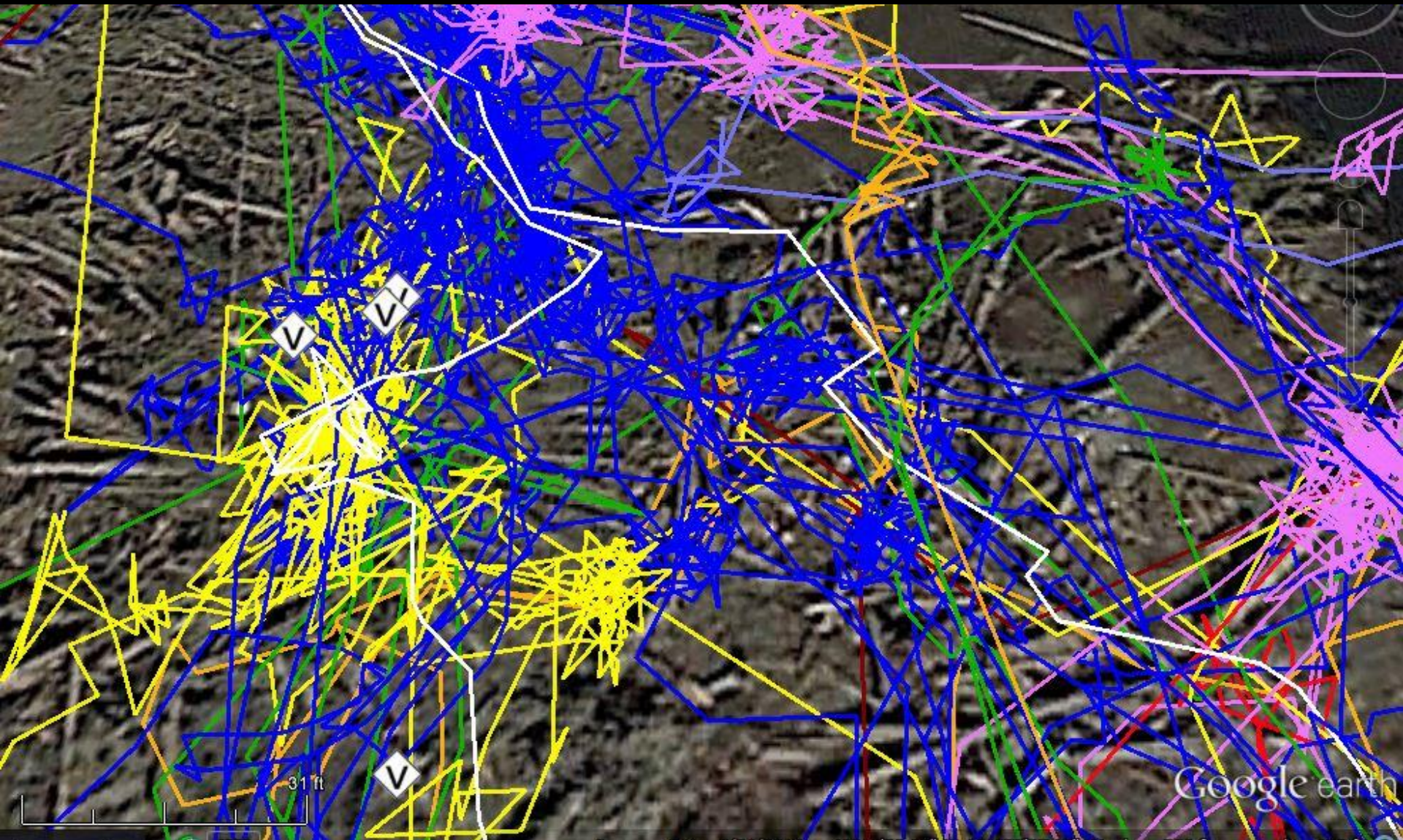
Search Progress 4/12 over old terrain



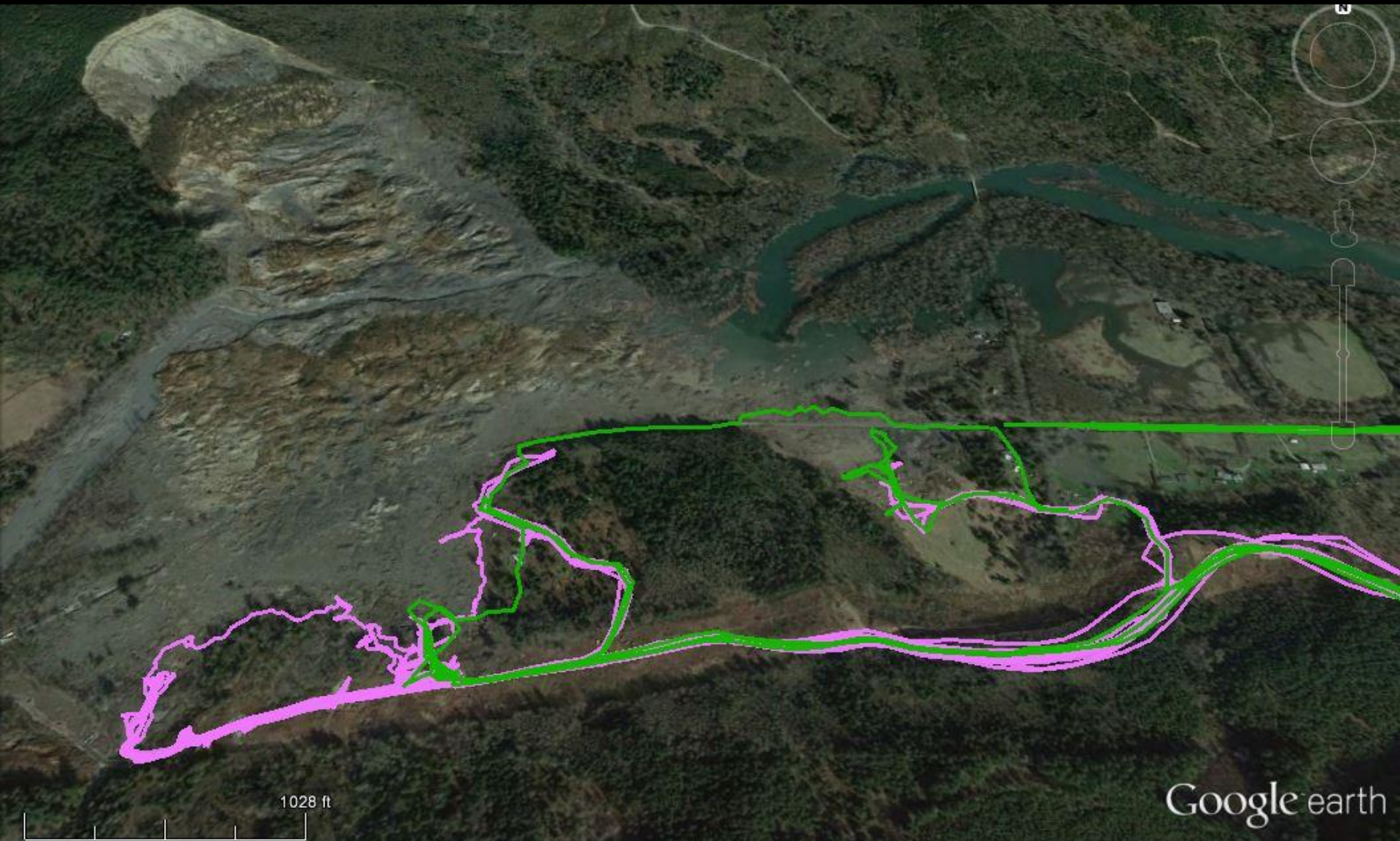
Search Progress 4/12 over new terrain



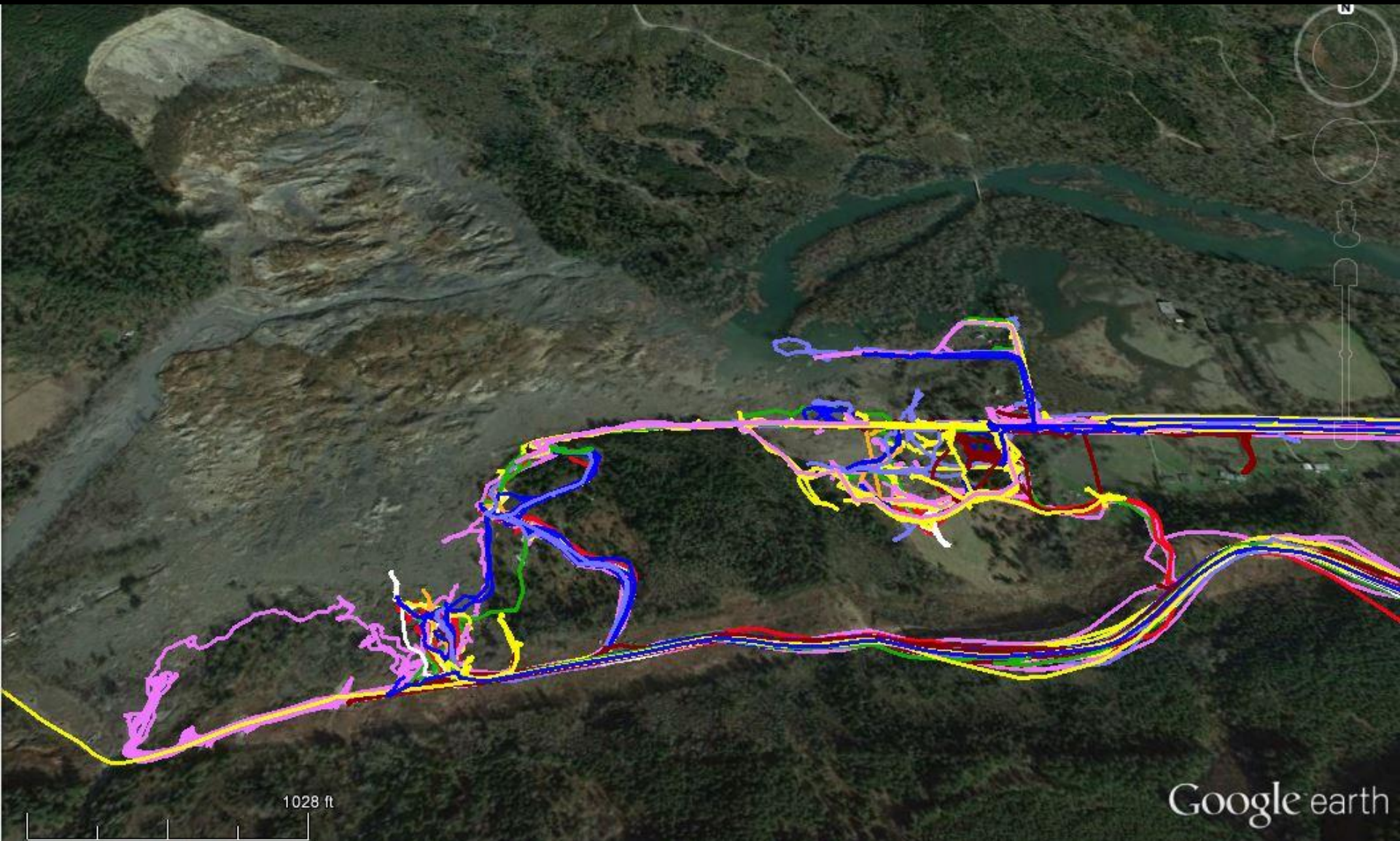
Close-up of Search Progress



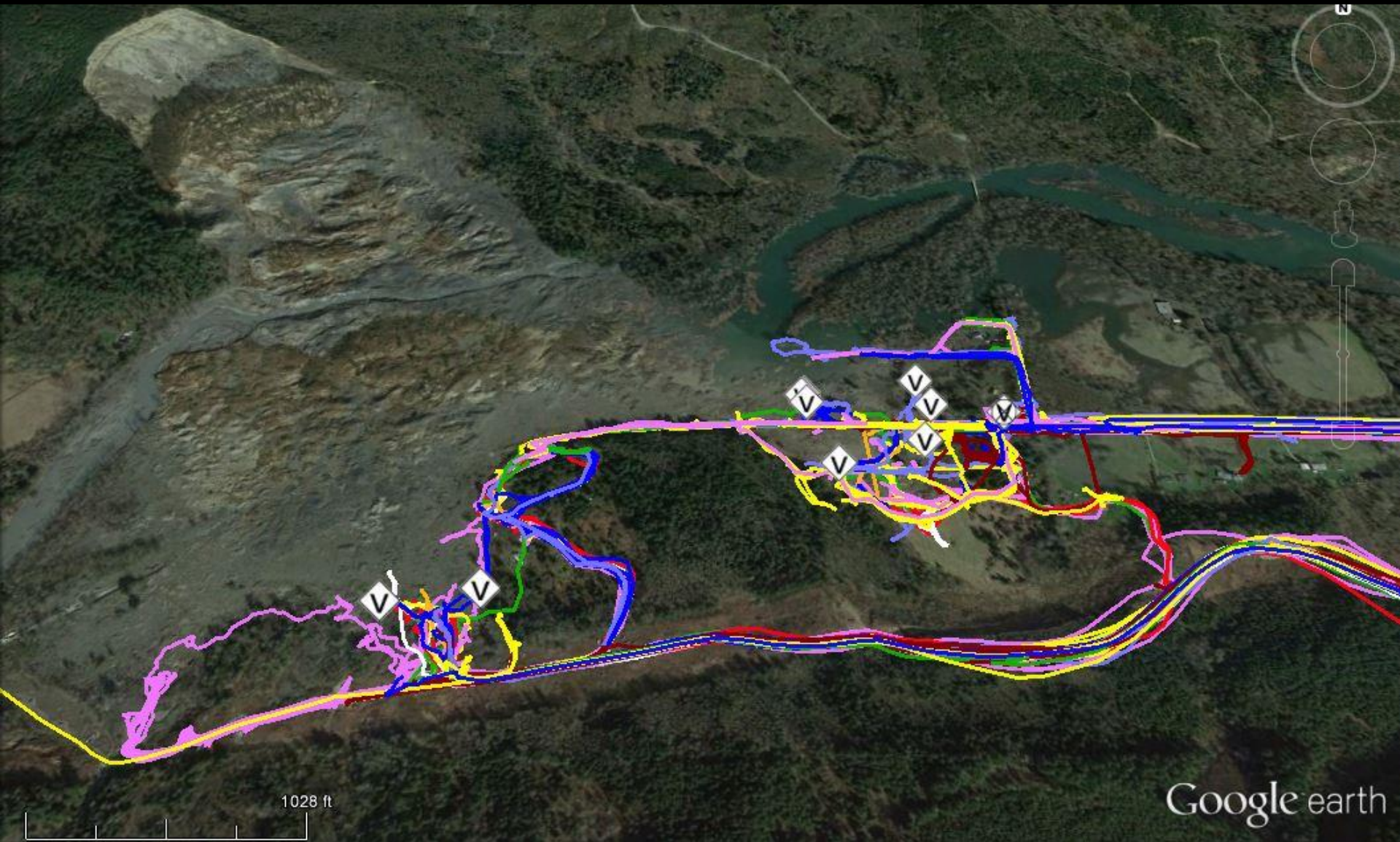
Richardson 3/28



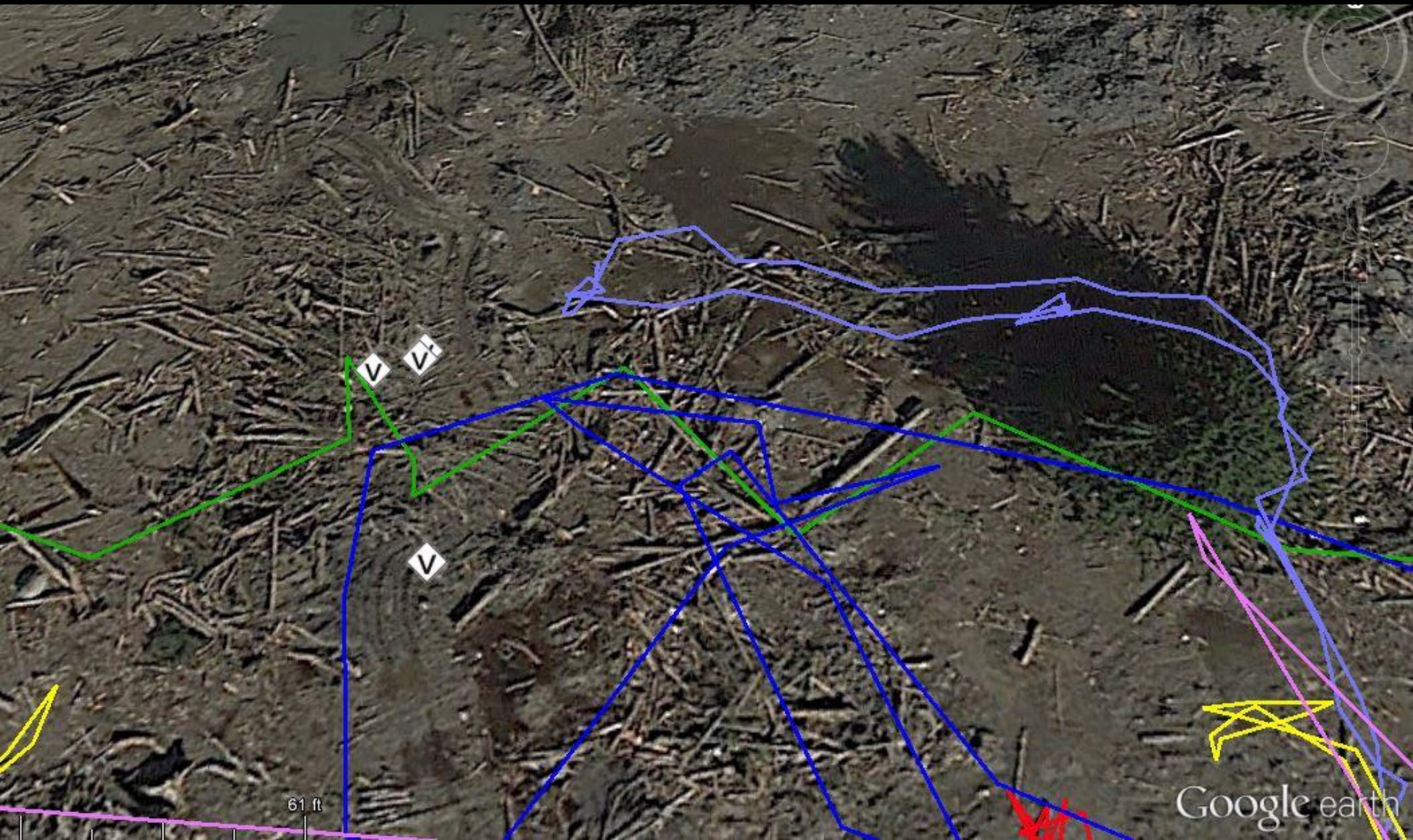
Richardson 4/12



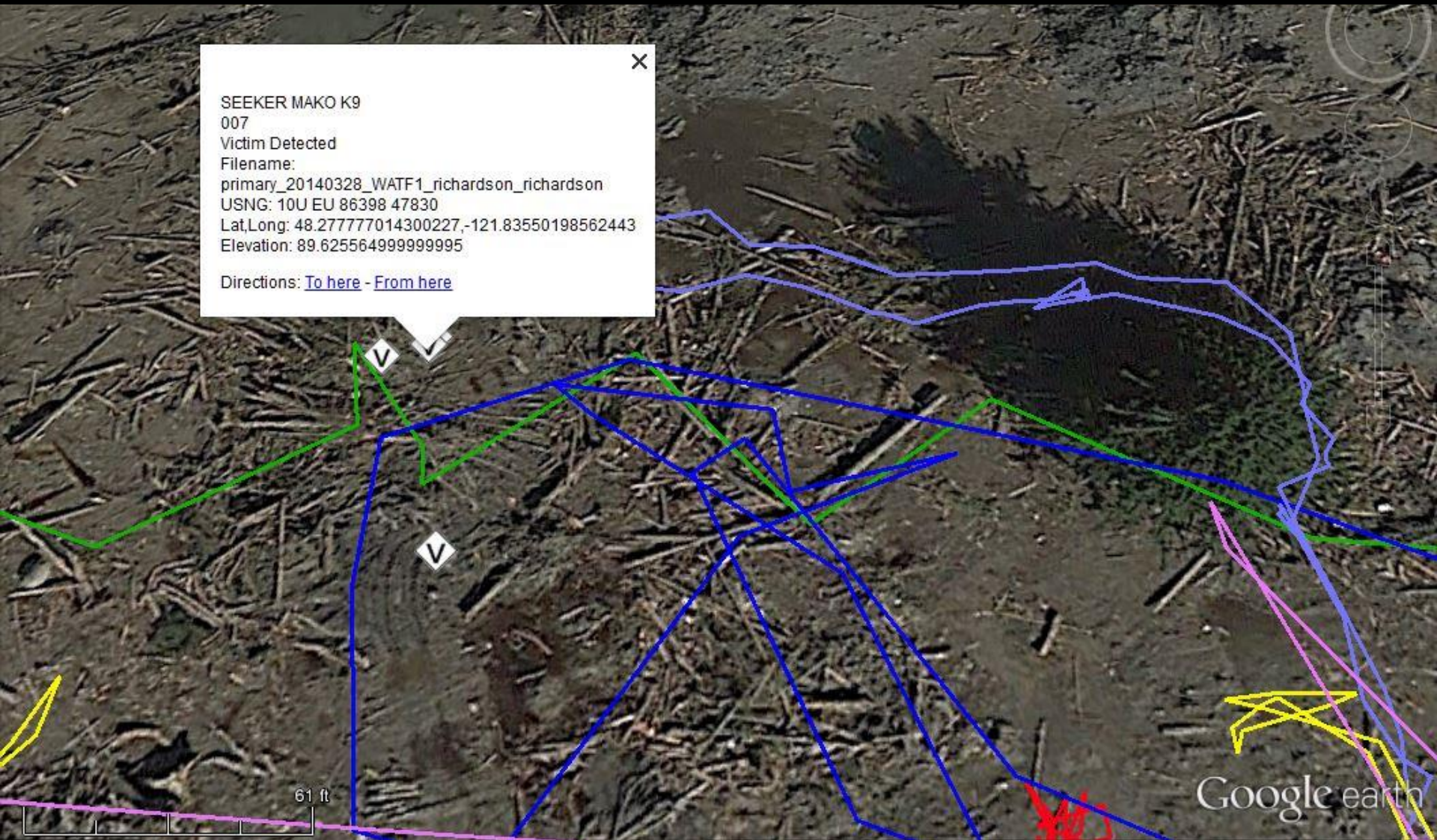
Documentation – HR Location



Returning to HR Location



Documentation – Exact Location of HR



High Density Secondary Searches

Using Heavy Equipment

Search Operations – High Density Secondary Search



High Density Secondary Search



High Density Secondary Searches



Search Operations – Search Area 7



Manual delayering of areas with known HR



Public / Private Partnerships

Public – Private Partnerships



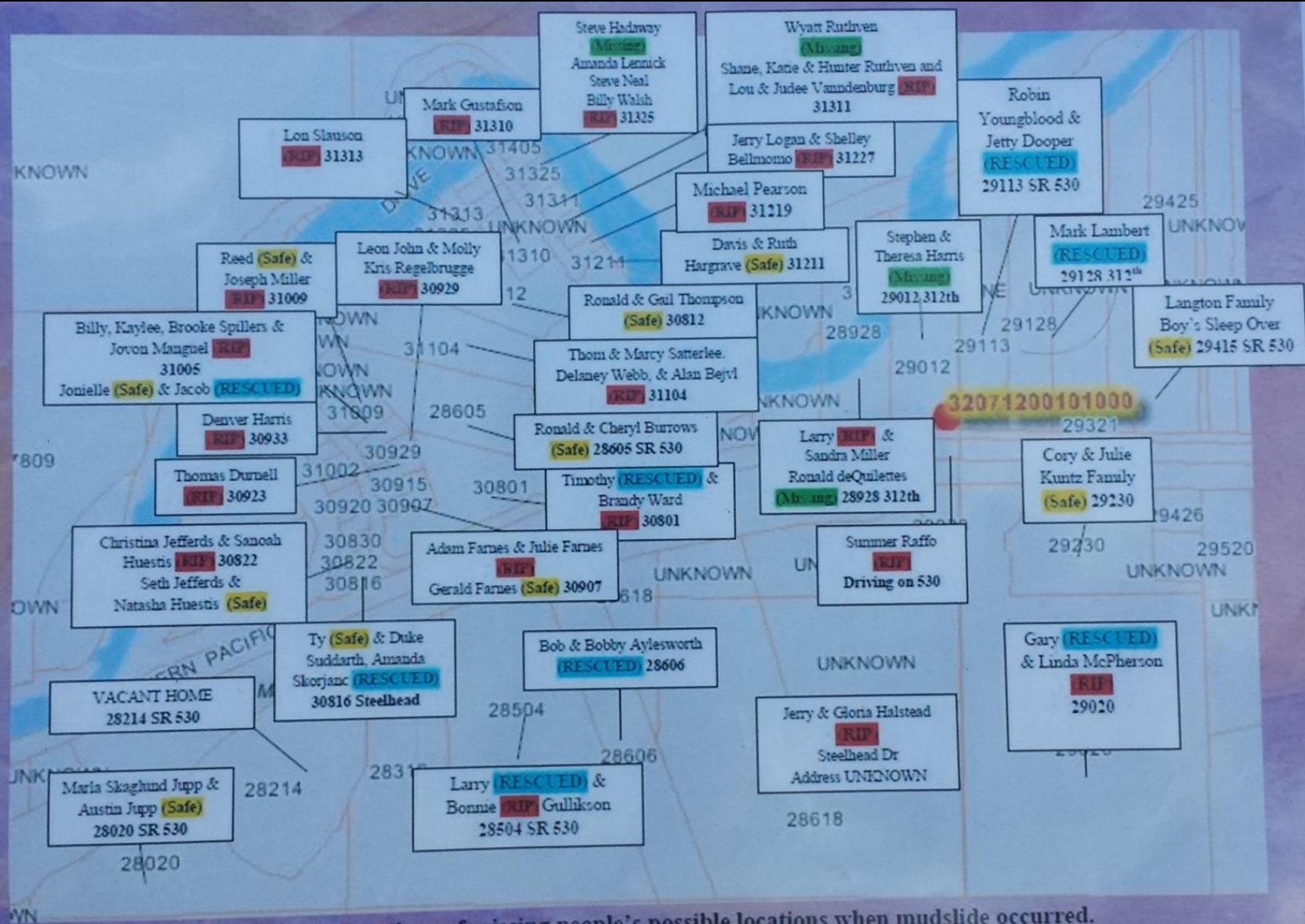
Public – Private Partnerships Making Friends



Encourage Helping Behavior By Civilians

- In a disaster, local resources are overwhelmed
- Citizens are no longer “Bystanders” – they are first responders
- We should not ‘rope off’ scenes if we do not have the capability to render assistance
- Civilians were a critical part of this response and were responsible for numerous saves & victim recoveries
- Need a plan to share intelligence with civilians

Intelligence – Community Partners



Map showing locations of missing people's possible locations when mudslide occurred.

Intelligence – Community Partners

11 RESCUED, 37 FOUND DECEASED, 6 PEOPLE STILL MISSING FROM MUDSLIDE OSO, WA



Steven Hadaway
(Missing)
31325 Steelhead



Ronald deQuillettes
(Missing)
28928 312th St



Bonnie Gullikson
FOUND RIP
28504 State Route 530



Billy, Kaylee (5), Brooke (2) Spillers &
Jovon (Jojo) Mangual (13)
FOUND RIP
31005 Steelhead



Larry FOUND RIP &
Sandy Miller
(Missing)
28928 312th St



Steve Harris
(Missing)
20912 312th St



Theresa Harris
(Missing)
20912 312th St



Mark Gustafson
FOUND - RIP
31310 Steelhead



Wyatt (4) Ruthven
(Missing)
Shane, Katie, & Hunter (6) Ruthven;
Lewis & Judee Vaandenburg
FOUND - RIP
31307 Steelhead



Denver Harris
FOUND - RIP
30933 Steelhead



Christina Jefferds
FOUND - RIP
30822 Steelhead



Sanoah Huestis 4 months
FOUND - RIP
30822 Steelhead



Thom & Marcy Satterlee
FOUND - RIP
31104 Steelhead



Alan Bejvl & Delaney Webb
FOUND - RIP
31104 Steelhead



Lon Slauson
FOUND - RIP
31313 Steelhead

Intelligence – Community Partners



Tom Durnell
*(FOUND – RIP)
30923 Steelhead



Adam Farnes
*(FOUND – RIP)
30907 Steelhead



Julie Farnes
*(FOUND – RIP)
30907 Steelhead



Brandy Ward
*(FOUND RIP)
30801 Steelhead



Summer Raffo
*(FOUND RIP)
Driving on Hwy 530



Leon John & Molly Kris
Regelbrugge
*(FOUND – RIP)
30929 Steelhead



Steve Neal
*(FOUND – RIP)
31325 Steelhead



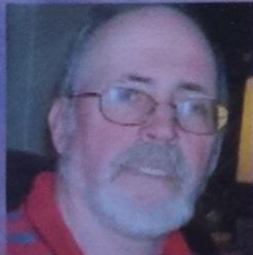
Jerry Halstead
*(FOUND – RIP)
Steelhead



Gloria Halstead
*(FOUND – RIP)
Steelhead



Amanda Lennick
*(FOUND – RIP)
31325 Steelhead



William (Billy) Welsh
*(FOUND – RIP)
31325 Steelhead



Joseph Miller
*(FOUND – RIP)
31009 Steelhead



Linda McPherson
*(FOUND RIP)
29020 SR 530



Shelley Bellomo
& Gerald "Jerry" Logan
*(FOUND RIP)
31227 E Steelhead

Michael W. Pearson
*(FOUND RIP)
31227 E Steelhead

11 RESCUED 4/22/14

Amanda Skorjanc
Duke Suddarth
Timothy Ward
Mark Lambert
Larry Gullikson
Robin Youngblood
Jetty Dooper
Jacob Spillers
Gary McPherson
Bob & Bobby Aylesworth

Volunteer Management



One Incident with Unvetted Vounteer

- WSP indicated man with dog who claimed to be a trained K9 handler was photographing and posting on line
- He vacated camp and was not located

Handling of Human Remains

Handling HR

- No ME on site when HR discovered
- Initial orders to leave partial HR in the field were renegotiated
- Initially all evacuations of HR by helicopter from the East
- Family/volunteers allowed to assist in recovery with TF assistance
- HR Handling Protocol Established
 - All partial HR treated as a whole body, based on 9/11 experience where >40% never recovered
 - All HR in a blue body bag (partial can be bagged in smaller bag first)
 - Tag with GPS location, gender, race, hair color, approx. age
 - Stop work in place (long air horn) during removal (hats off)
 - Transported to LZ (initially by Ops, then by FSRT)
 - Helicopter pick if an inaccessible area (due to conditions) otherwise helicopter load via LZ
 - Return to work after HR left work zone
 - Trucked out end of day after road put through

Colorado FSRT (Fatality Search & Recovery Team) Assisted after approx. 10 days



HR – FSRT Refer Trailer





Difficulties with Partial HR

- When encountering tissue, organs, muscle
- Was it from a freezer (bear, elk, deer), a pet, farm animal or human
- Run K9 to see if alert on HR
- Use Team MD to help assess, but...
 - They don't send anyone to medical school to determine whether a muscle is human or non-human

Time for Remembrance



Material Movement

Material Movement



Material Movement



Material Movement



Material Movement



Hazards & Mitigation

Water & Mud & Quicksand

Water & Mud & Quicksand



Water & Mud & Quicksand



Water & Mud & Quicksand



Water & Mud & Quicksand



Water & Mud & Quicksand



Dewatering

Hazard Mitigation – Water Management

Pontoon Excavator
River Channel

Culvert Replacement

Long Arm Excavator
Channeling

Berm Construction



Rerouted Stream

Targeted Dewatering

Hazard Mitigation – Digging Ditches



Hazard Mitigation – Rerouting Streams



Hazard Mitigation – Rerouting streams



Hazard Mitigation – Water Management



Hazard Mitigation - Water Management



Hazard Mitigation – Berm Building



Planking & Punchin'

Hazard Mitigation - Planking



Hazard Mitigation - Planking



Hazard Mitigation – Punchin'



Hazard Mitigation – Punchin'



Hazardous Materials

Hazardous Materials Presumed Present

- Raw Sewage
 - Household Haz Mats
 - Oil, fuel, fluids from vehicles & power equipment
 - PCB Transformer Oil
 - Propane Tanks
-
- Dilution by large volume of dirt & water helped, but...

Hazardous Materials Mitigation

- 8 Haz Mat Technicians on Task Force
- All spotters briefed on spotting potential HM
- Containers removed to isolated storage area
- EPA assisted with removal of HM
- PSE assisted with removal of transformers
- Decon Established on both sides

Hazard Mitigation – Haz Mats



Decon - Supplies



Gross Decon – Boot Wash



Gross Decon – Boot Wash



Technical Decon - Personnel



Technical Decon – K9



Decon - Vehicle



Highly Complex Incident

Traffic Hazards

- Significant road building operation $\geq 4,000$ dump truck loads
 - Power line road for access
 - Created dump truck v. Gator & small vehicle risk of collision
- Mitigated by:
 - Widening Road
 - Creating turnouts
 - Use of traffic flaggers

Heavy Equipment & Logging Style Operations

Example: Resources assigned 4/13/14

- Search Area 1
 - Rescue Manager (1)
 - Search Manager (1)
 - Rescue squad of 6 (1)
 - Structures Specialist (1)
 - Heavy Rigger (1)
 - Haz Mat Specialist (3)
 - Excavators (5)
 - K9 Teams (8)
 - Safety (1)
- Search Area 2
 - Rescue Manager (1)
 - Rescue Squad of 6 (2)
 - Heavy Rigger (1)
 - Haz Mat Spec (2)
 - Sawyer Crews (3)
 - National Guard (33)
 - Excavators (8)
 - Shovels (2)
 - Forwarder (1)
- Skidder (1)
- Quarry Dumps (5)
- Marsh Masters (3)
- Swamp Boats (1)
- Excavator Long Arm (1)
- Excavator Pontoon (1)
- Search Area 6,7
 - Rescue squad of 6 (1)
 - Search Manager (1)
 - K9 Teams (10)
 - Haz Mat Specialist (2)
 - Boeing Haz Mat (8)
 - Safety (1)
 - AmeriCorps Volunteers (10)
 - National Guard (15)
 - Sawyer Crews (2)
 - Excavators (17)
 - Quarry Dumps (2)

Incident Complexity – Heavy Equipment



Incident Complexity - Shovels



Incident Complexity – Log Forwarder



Incident Complexity – Quarry Dump



Incident Complexity – Skidders & LMTV &...



Heavy Equipment Mitigation

- Proper Span of Control
 - Use TFLs to supervise
 - Task Force
 - Heavy Equipment
 - Dewatering
 - Volunteers
- Create separation – search areas divided into lanes 100' wide in East
- Limit exposure (only essential personnel in field)
- Positive Communications (use of spotters with radio communications)

Incident Complexity – Heavy Equipment



Limit Exposure – Only Essential Spotters



Water Operations

Incident Complexity – Water Operations



Incident Complexity – Marsh Master



Incident Complexities – Dive Operations



Water Hazard Mitigation

- Water rescue assets in place
 - Task force John boats
 - Marsh Masters (3)
 - Hovercraft
 - Swift water assets (CA-TF7)
 - Dive rescue
 - Helicopter pick capability

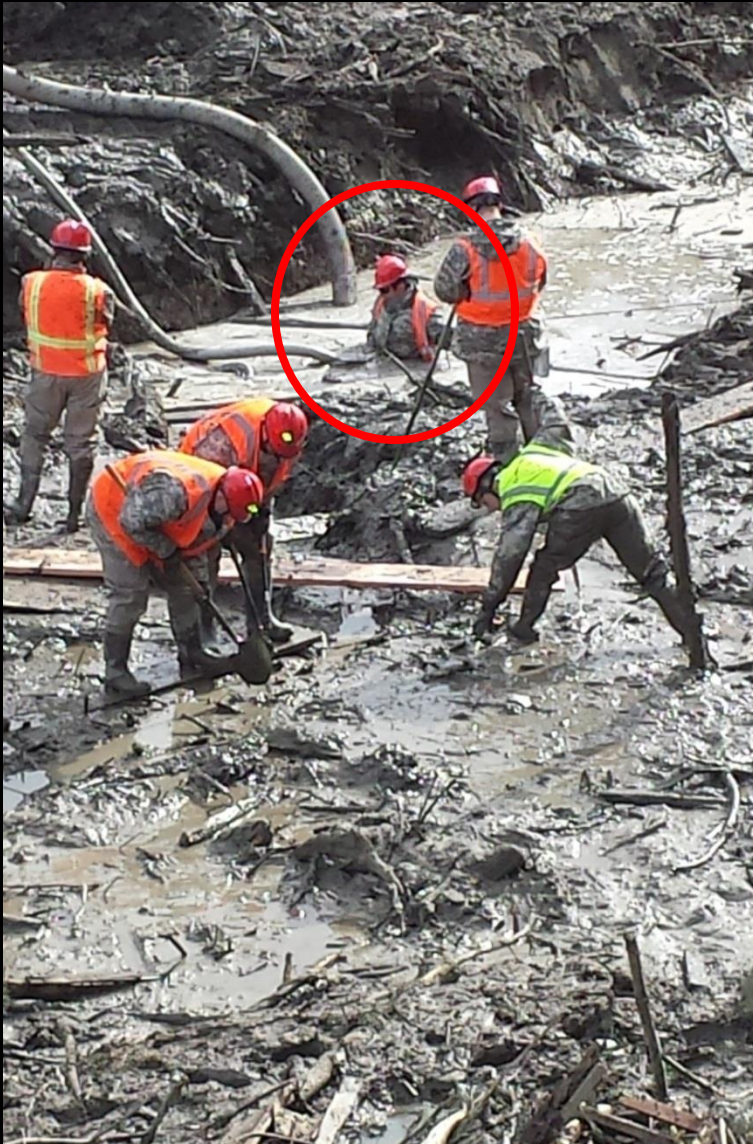
Incident Complexity – Water Operations

Water Rescue Assets



Personnel

Incident Complexity - Personnel



Limited Span of Control

- Mitigated by close supervision
- Communication

Air Operations

Incident Complexities - Helicopters



Air Branch

- Primary hazard was low flying helicopters over work & camp areas
- Some tents blown down
 - Person knocked out of bunk
- Door thrown by air blast struck volunteer in head
- Mitigation efforts
 - Air Branch Rep on ground
 - Air Branch Supervisors
 - No Fly Zone
 - Establish altitude limits over camp and work zones
 - Communicate

Secondary Slides



Hazard Mitigation – Engineers Outlook



Medical Concerns

- Trip & Fall Hazards
- Drowning hazards
- Falling Trees
- Power equipment
- Heavy Equipment
- Traffic Collisions
- Exertion
- Hypothermia
- Hyperthermia
- Infection
- Aches & pains

Facilities – Division 4 Medical & Staging



Facilities – Search Area 1, 2 Staging – Medical & Warming Tent



Facilities – Search Area 1, 2 Staging



Veterinary Care – K9

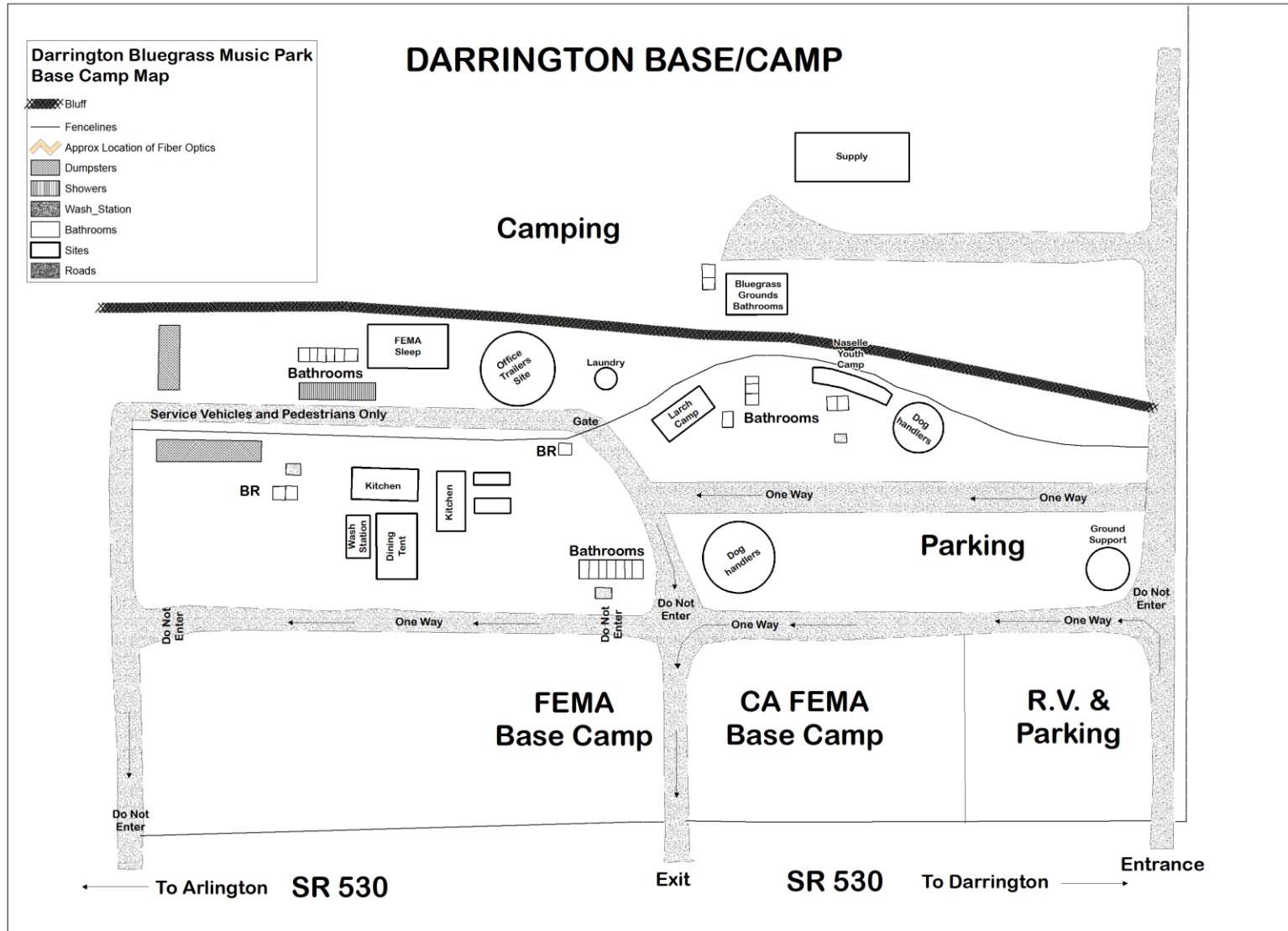
- Worn out pads
- Hypothermia (>42 cases)
- Fatigue

Logistics

Base Camp – Darrington Bluegrass Music Park



Base Camp



Base Camp – WA-TF1



Base Camp – WA-TF1



Base Camp



Facilities – Task Force Briefing Tent



Base Camp – DNR Type I Food Unit



Base Camp – Chow Hall



Communications



- Task Force Repeaters
- Incident Repeaters
- FEMA MERS
- Interoperability Concerns
 - Federal and local responders not on same radios (Federal prohibits use of encrypted system by locals)

Facilities – Forward Equipment Cache



Additional Lessons Learned

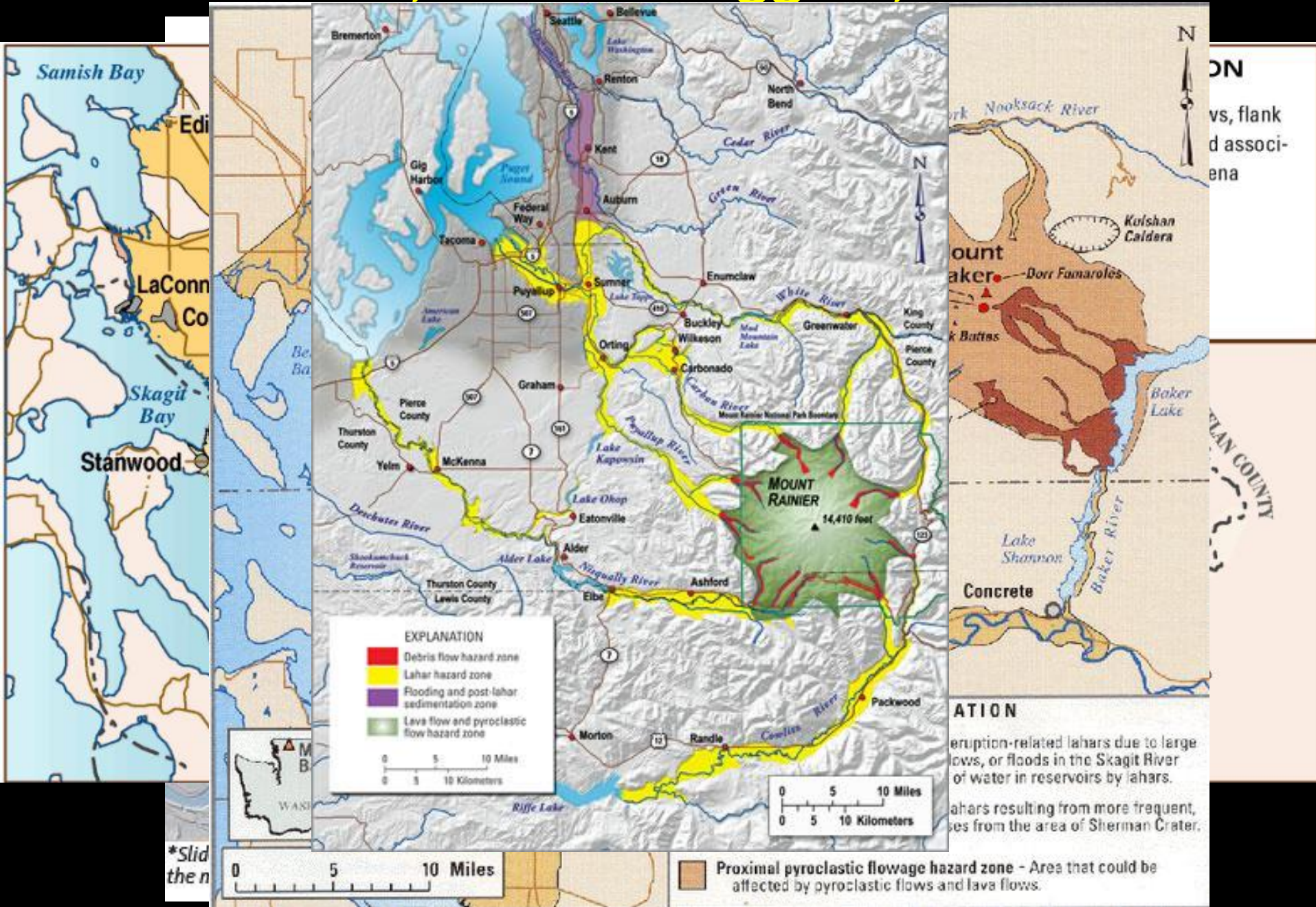
Embrace & Develop New Technologies



Consider Disaster Apps for Handhelds

- Victims can self report needs
- Volunteers can self report capabilities
- Incident managers can match help to the needs facilitated by the app

Not the first, not the biggest, not the last



Spend Time with Family & Friends
Take Time to do the things you love
Enjoy every day....



Questions?

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